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OF

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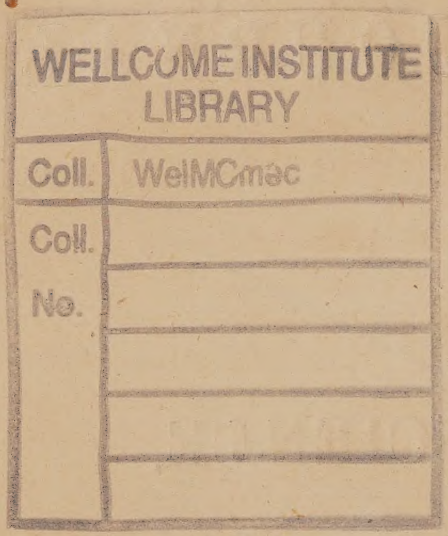

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THE MADRAS

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No. II.—FEBRUARY, 1870.

ORIGINAL ESSAYS.

ART. V.—*Do Zymotic Diseases ever arise independently of Contagion?* A Note by GEORGE SMITH, M. D., Principal Medical College and Professor of Medicine.

THIS is one of the important medical questions of the day. How is it to be solved? By illicit generalizations, or by generalizations naturally emerging from a sufficient knowledge of all the facts?

"There are two ways" says Bacon, "and can be only two of seeking and finding truth. The one from sense and particulars takes a flight to the most general axioms, and from those principles and their truth settled once for all invents and judges of intermediate axioms. The other method collects axioms from sense and particulars, ascending continuously and by degrees, so that in the end it arrives at the most general axioms; this latter way is the true one." This observation of the great reasoner embodies the principles of the inductive philosophy, which are applicable as much to the methods of medical research as to the study of the fixed sciences. No science suffers or has suffered more from false facts and false theories than Medicine. The ascent from the manifold to unity, so difficult in every physical science, is specially difficult in the uncertain sciences, where

the relation of cause and effect is so intricate and frequently so inappreciable by our senses. Still there is no alternative: the groundwork of our science must consist of facts of observation, true facts not true-like facts, far less false or doubtful facts. These true facts once attained must be colligated in groups by laws which naturally emerge from them, laws which "find the one in the many." In colligating facts and evolving generals from particulars, we arrive at certain laws which may embody all the facts, in which case, these laws are to be regarded as certainly true, or they may embody only the major or minor portion of them, leaving residual phenomena to be accounted for under higher generalizations. Such exceptional laws, however, are uniformly to be recognized as transitional, search being continued for the higher law, which includes not only the imperfect laws, but also all their known exceptions. In Medicine, as in other sciences, theories and hypotheses are too often built upon exceptional or even inaccurate facts, and illicit generalizations are the necessary result. Dr. Whewell alludes to this tendency of the human mind in the following passage: "Although all knowledge of the external world is in reality only to be obtained from observation by *inductive* steps, minute perhaps, and slow and many, as Galileo and Bacon had already taught, the human mind conforms reluctantly and unsteadily, and is ever ready to rush to general principles, and then to employ itself in deducing conclusions from these by *synthetical* reasonings; a task grateful, from the distinctness and certainty of the result, and the accompanying feeling of our own sufficiency."

These remarks and principles may fittingly introduce the following extracts bearing on the laws of the propagation of Zymotic Disease.

"The matter" observes Dr. Aitken, "by which the specific miasmatic diseases are communicated and propagated, is *solely* derived from the body of the similarly diseased human or animal being; for there, during the course of the specific disease, is the soil in which the specific poison is bred to multiply and propagate its kind." Again: "The belief in the spontaneous origin of the specific miasmatic diseases rests on evidence entirely negative." Dr. W. Budd remarks, "What small-pox and measles were in the Arab in the days of Rhazes, they are still in the London cockney of our own time. What they are in the London cockney, they

are in the Wild Indian of the North American prairie, and in the Negro of the Gold Coast. To all the other specific communicable diseases, as far as our records go, the same remark applies. In cases the most diverse, under climates the most various, age after age, through endless generations of men, these diseases pass down through the human body, (sometimes through animals, *e. g.*, ovine small-pox?) perpetuating their own kind, and each maintaining its separate identity by marks as specific as those which distinguish the asp from the adder, or the hemlock from the poppy." Such being the case, it is difficult, say Drs. Watson and Budd, to conceive "that diseases of whose propagation this is the history can ever be generated in any other way." Dr. Aitken remarks, "the really essential characters of specific diseases and morbid processes remain as persistent as the specific characters of a plant or an animal."

Again: "the origin of all specific diseases, or how their respective first contagia arose" is alike unknown. "This, in Pathology, is just such a question as in Physiology is the origin of species." (*Aitken quoting Simon*). Finally, "a belief is now rapidly gaining ground, and acquiring a hold on the popular mind, that advances in the science of Medicine in future years will be mainly due to a better appreciation of the *causes* of disease." *Aitken.*

Many recent writers lay down dogmatically the following conclusions:—

I. That specific zymotic diseases can *only* be propagated by continuous succession.

II. That each zymotic disease has an unchangeable identity, its marks being "as specific as those which distinguish the asp from the adder, or the hemlock from the poppy."

III. That the law of the propagation of infectious disease is perfectly made out. (*Budd*).

IV. That the theory of the *genesis de novo* of zymotic principles rests entirely on negative evidence.

To lay down laws so absolute as these, implies that we are conversant with the true etiological nosology of specific fevers; that we have differentiated and isolated the specific fever poisons; that we have established the individuality of each zymotic principle; that we have proved that each exhibits "a constant series of morbid changes and

lesions;" that we have shewn by induction the untenability of the theory of spontaneous generation of such principles; and that all known facts fall readily and naturally under laws as absolute and exacting as that of gravitation. But is this really the case? Are we reasoning, as Whewell states the human mind loves to do to save itself toil and trouble, or are we sternly climbing the rougher road indicated by the grand old philosopher? What know we of the nature of these poison principles? Do they consist of perverted germinal matter? Are they organic or inorganic? Are they organisms, and if so, are they of vegetable or of animal origin? Where is the correct nosology of specific fevers to be found? It is certainly not too much to aver that we have not yet differentiated and isolated the fevers themselves; that we have not yet proved the distinct individuality of each specific disease; that we have not yet proved the impossibility of the generation *de novo* of zymotic principles, and that we have not classed under self-evident laws numerous non-conforming facts, although we have laboured to fit them to a Procrustes' bed by the simple expedient of pulling them out, or of cutting them short. Under these circumstances, would it not be better and more philosophical, instead of laying down absolute laws limiting the propagation of zymotic diseases to contagion alone, to record carefully and without distortion every conforming and non-conforming fact, to recognize the principle that the truth lies in them and not in our theories or opinions, and to wait for the discovery of the higher law, which shall embody alike transitional laws and existing exceptions to the same? Let us remember that no ultimate law can have an exception. An exception proves that we have found *a* law, but it equally proves that we have not found *the* law.

The following list of zymotic diseases, with their theoretic zymotic principles, is far from complete, or perhaps strictly accurate, but it is sufficiently so for my present purpose.*

Small-pox	Variola	Varioline
Cow-pox	Vaccinia	Vaccinine
Glanders	Equinia	Equinine
Hydrophobia	Lyssa	Lyssine
Syphilis	Syphilis	Syphiline
Infection in Dissecting	Necusia	Necusine

* Vide Dr. Barker on Malaria and Miasmata.

Erysipelas	Erysipelas	Erysipeline
Puerperal fever	Metria	Metrine
Measles	Morbilli	Morbilline
Rubeola (Rötheln)	Rubeola	Rubeoline
Scarlet fever	Scarlatina	Scarlatinine
Hooping cough	Pertussis	Pertussine
Dysentery	Dysenteria	Enterine
Diarrhœa	Diarrhœa	
Cholera	Cholera	Cholerine
Influenza	Influenza	Influenzine
Typhus	Typhus	Typhine
Plague	Pestis	Pestine
Ophthalmia	Ophthalmia	Ophthalmine
Gangrene	Gangræna	Gangrenine
Lock Jaw	Tetanus	Tetanine
Miliary Fever	Miliaria	Miliarine
Diphtheria	Diphtheria	Diphtherine
Mumps	Parotitis	Parotine
Croup	A. Trachealis	Tracheine
Chicken-pox	Varicella	Varicelline
Typhoid Fever	Febris Enterica	Typhoidine
Pyæmia	Pyæmia	Pyæmine
Ague, &c.	Feb. Int., &c.	Pyretine (*Farr*)
Glandular Inf.	Adenitis	Adenine
Aphthæ	Aphthæ	Aphthine
Leprosy	Lepra	Leprine
Consumption	Phthisis	Phthisine
Scrofula	Scrofula	Scrofuline
Yellow Fever	Febris Flava	Flavine (?)

The list might have been extended by adding the zymotic principles of Dengue, of Relapsing Fever, of Febricula, of Continued Fevers, of malignant Pustule and of various epizootics communicable to man. Dr. W. Budd threatens us with other additions to this rather long list.

In speaking of zymotic principles, of their propagation by contagion alone, of their essential individuality and so forth, writers have most frequently selected as illustrations of their views the diseases grouped as *exanthemata*, but the strength of a chain is not the strength of its strongest but of its weakest link, and the verity of an absolute law is the verity of its most assailable point. Let us look into the question a little.

(A.) The Malarial group of Endemic Fevers arise from fever-poisons derived from *without* the organism.

Few, I think, will deny the fact that fevers of this class are developed by specific poisons generated *de novo*. Ague it is true is not contagious, and moreover it is prone to recur, in which respects it resembles the class of toxical diseases; "but I" remarks Dr. Farr, "feel inclined rather to consider it a zymotic disease, in which, to use the language of Liebig, the exciter is destroyed as soon as it is reproduced; and this view is confirmed by the analogies of remittent fever, or yellow fever, so intimately allied in some respects with ague, in others with plague, and apparently *contagious* in certain circumstances." Though ague proper and uncomplicated remittent fevers are not contagious, yet when the latter become, what the old authors called "pernicious," in consequence of union with septic or miasmatic poisons, we see produced affections such as choleraic remittents, dysenteric remittents, petechial, scorbutic and hæmorrhagic remittents, which history proves to be eminently contagious diseases.

The miasm which excites intermittent fever, "remarks Dr. Farr," may be designated "Pyretine." If pyretine be a zymotic principle, it is, as a general rule, always generated *de novo*.

(B.) The Miasmatic group of Endemic Fevers are fevers caused by products of decomposing animal matter. (*Laycock.*)

These fevers are all of local origin. They are characterized by marked gastro-enteric symptoms, such as endemic summer Diarrhœa; endemic summer Cholera; endemic Dysentery; or inasmuch as febrile action is often the pathological equivalent of diarrhœa, they appear as simple continued fever or as continued fever with adynamic symptoms. I am not prepared to say that all these forms of miasmatic action are non-contagious: many of them no doubt are, but I should be unwilling to trust implicitly to the non-contagious character of any idiopathic continued fever, marked by distinct typhoid symptoms. Such fevers seem to me to shade into the typhus group. These fevers are all generated *de novo*.

(C.) Endemic Fevers of the Septic group are caused by putrescent animal matter (*Laycock*), and constitute an interesting group of diseases, as in them the propagation by *contagion*, and the *genesis de novo* of the zymotic principles, can most clearly be exemplified. The zymotic principles I will call, for the nonce, the Erysipeline group.*

* 1 Erysipeline.
2 Necusine.
3 Adenine.
4 Gangrænine.
5 Metrine.
6 Pyæmine.
7 Ophthalmine.
8 Tetanine ?
&c. &c. &c.

In former days, when a lad of the Military Male Orphan Asylum wished to escape from the pains and penalties of school work, he effected his object most readily by applying chunam to his eye, thereby developing a catarrho-purulent ophthalmia, which ophthalmia was rapidly propagated through the Asylum by intentional and direct contagion. When an epidemic constitution of the air, however, was present, the ophthalmia spread not only by the direct contact of pus-stained fingers, but also by infection. The same result I have seen in the Eye Infirmary as the consequence of bandaging both eyes, so as to exclude light and air for a prolonged period. Now, here is a *genesis de novo*, an artificial generation of an eminently communicable poison, *ophthalmine*. Let us analyse the facts a little. By the application of a simple non-specific exciter of inflammatory action, chunam, to the mucous membrane of the eye, changes take place of an inflammatory character in the epithelial cells which carpet that membrane, and these are converted into pus-cells endowed with forces which the original epithelial cell did not possess, but which were developed in that cell under the operation of the nutritive changes which we call inflammation. If *ophthalmine* be a distinct zymotic principle, then it can be generated *de novo* by the living system under the operation of a simple non-specific exciter. If in consequence of morbid action normal germinal matter can become abnormal, need we be surprised if normal forces also become abnormal, and if the contagious stamp can be impressed on germinal matter by the living system in one case, why may it not also in others? The living system can develope *de novo* the cancer cell, the gonorrhœal pus-globule, the exudations of scrofula and of tubercle—and tubercle is a zymotic disease according to Dr. Budd,* contagious too, according to

* Regarding the nature of Tuberculosis, Dr. B. Sanderson remarks: "I hold, with Waldenburg, the material to be solid matter in a state of extremely fine division, but do not agree with him in separating tuberculosis from the infective processes which constitute the specific infective diseases, *e.g.*, small-pox, scarlet fever, glanders. By proving that the infective material is necessarily solid, not in solution, we establish and strengthen the analogy with other infective diseases. It appears to me certain, from the experiments of Chaveau, that the contagium of small-pox is an insoluble substance, and exists in the state of minute particles, and that the contagia of vaccine, of glanders, and of ovine small-pox, are of a similar nature. All our researches therefore tend to bring tuberculosis into the category of infective diseases; but on the other hand, lead us to believe that the infective matter is infinitely more common, and that the conditions for its production are probably of much more frequent occurrence than those which generate the other morbid poisons."

many eminent observers—and such examples seem to me to prove that abnormal changes lead to the development of abnormal forces, the nature and properties of which are in many cases entirely unknown to us. In this field of enquiry, instead of being able to lay down absolute laws, every medical man must feel as if he were only spelling out the first letters of its alphabet.

Accoucheurs agree that the overcrowding and insanitary condition of a lying-in hospital will infallibly generate puerperal fever. The last echo from Paris of discussions regarding the frightful mortality of maternities from puerperal fever conveys to us the sad lesson "Il ne faut plus d'agglomeration de femmes en couches, parceque l'agglomeration des nouvelles accouchées *engendre* forcément, fatalement le poison puerperal."

"La proportion est la suivante dans la mortalité des nouvelles accouchées :—

Maternité..... ..... 1 sur 19·62
Clientèle de la Ville..... 1 sur 322·20
Bureau de Bienfaisance. 1 sur 142·40

(*Gaz. des Hop.* 25 *Sep.* 1869.)

Here is "la force brutale de chiffres" in support of the genesis de novo of *metrine;* knowing the conditions, we could develope metrine artificially. Metria is one of the most communicable of all zymotic diseases.

Medical men agree that the overcrowding and insanitary condition of hospitals, will in due time develope hospital erysipelas, hospital gangrene, and pyæmia. "In hospitals, the intensity of the traumatic atmosphere is competent *to engender* erysipelas and pyæmia." (*Holmes.*)

"In fatal country amputations, 5 in 100 die of pyæmia.
Do. hospital do. 50 in 100 do. do.

From 1865 to 1868 eighty-one cases of pyæmia originated within the walls of St. George's Hospital, London, while during the same period nine applied for admission from without." (*Sir J. Y. Simpson.*) It may be said that metrine, erysipeline, gangrenine, and pyæmine are but homotropic or allotropic varieties of the same specific poison Erysipeline, a view which probably is near the truth, but if so it is one which equally recognizes the generation *de novo* of a specific zymotic poison, and it damages materially the absolute law which claims for zymotic principles "marks as

specific as those which distinguish the asp from the adder and the hemlock from the poppy." If it be contended that these zymotic principles are permanent individualities, how can we explain the fact that the puerperal system can, by its own vital power, transmute not only erysipeline into metrine, but also necusine, scarlatinine, typhine, varioline and enterine?

An unmarried woman died of peritonitis,* the result of perforation of the intestine; a medical man conducted the post-mortem examination. The day following he attended a woman in labour; the labour was natural; on the third day, the woman was attacked with *metria* and died; he attended a second case with the same results, puerperal peritonitis and death. The mother of the last patient, who had nursed her daughter and washed the linen after her decease, was attacked with inflammation of the absorbents of the right arm, followed by enlargement and inflammation of the axillary glands, and death. Within three days of the occurrence of the last case, the medical man was attacked with inflammation under the nail of the right fore-finger, followed by dangerous *adenitis*, which placed his life in great peril. These facts are very suggestive. They shew in the first place the development in the living (or recently dead) system of a zymotic principle, *necusine*, which, communicated to two non-puerperal cases, retained unchanged its character, that is to say if necusine and adenine be the same, but in two puerperal women, because transmuted to *metrine*.

Having alluded to endemic fevers arising from specific fever-poisons derived from *without* the organism, let me solicit attention to the epidemic fevers arising from poisons *within* the organism; and in so doing, I shall be guided by Dr. Laycock's Classification of Pyretic diseases.†

(D.) The Typhus group of Epidemic Fevers.*

* Typhine *and its varieties.*
Typhoidine.
Zymotic principle of Relapsing Fever.
Miliarine.
Pestine.
Cholerine (?)

Is the zymotic principle of typhus ever generated *de novo*? If we utterly deny the possibility of such genesis, we must be prepared to explain the sudden and localized hurricanes of the disease in jails, armies, ships at sea, detached houses, overcrowded rooms, courts of justice,

* This case is given by Dr. Barker in his work on Malaria already quoted, page 162.

† Medical Observation and Research, 2nd Edition.

and in masses of people in close and inevitable alliance with foul air, misery and famine. Will contagion alone, without doing violence to facts, explain all the elements of the question? So familiar are we with the essential conditions of typhus, that, *within the geographical limits of the disease,* we can indicate with certainty under what circumstances its appearance may be predicted. The poisons, which are the exciters of the typhus group of fevers, are inevitably developed when men and animals are overcrowded and exposed to the putrescent emanations of the living system. Much light would be thrown upon typhus and its varieties were we to study the history of the disease, and the various forms in which it has appeared as a destructive epidemic. Typhus was the plague of Athens described by Thucydides, the putrid and malignant fever of the older authors, the Pestis Bellica of the seventeenth century, the Jayl Fevers of the eighteenth century, the Infectious Ship Fever, the Maladie des Prisons, and the Fièvre des Hospitaux of former French writers, and the Kriegspest of German authors. When the specific fever-poison is associated with malarious, miasmatic, or septic influences, the characteristic features of the disease are intensified as regards their malignity, and the simple exanthematic typhus becomes the sweating Pestilential Typhus, the Dysenteric Typhus, the Glandular Typhus or Plague, the Pali Plague, or the Black Death—all essentially *fœcal* diseases. Dr. Murchison gives it as his opinion that the primary exciting cause of typhus is a specific poison, emanating from the bodies of persons previously affected (*contagion*) or generated *de novo*." In support of this view, he appeals as an evidence of the spontaneous origin of the disease, (1) to the mode of origin of sporadic cases, and of limited outbreaks of typhus; (2) to the history of Jail Fever; (3) to the history of Ship Fever;* (4) to the history of Military Fever; (5) to the history of Hospital Fever; (6) to the Contagious Fever in the lower animals which breaks out on board ship in consequence of overcrowding. Dr. Murchison bears equally distinct evidence to the *occasional spontaneous origin* of the poison of Typhoid fever. He remarks: "Admitting that pythogenic fever is under certain circumstances communicable, I believe that it is equally true, that many cases have a spontaneous origin."

* The crowded decks of a Slaver are thinned by typhus and dysentery; that dysentery is the dysenteric *typhus* which communicates typhus to others.—*Murchison.*

Trousseau admits that in many instances its origin is spontaneous.

(E.) The Exanthematous group of Epidemic Fever-poisons.*

(*a*) *Exanthematic principles.*
Varioline.
Vaccinine.
Varicelline.
Morbilline.
Scarlatinine.
Rubeoline.

(*b*) *Diseases allied to the exanthemata.*
Diphtheria and its varieties.
Vesicular aphtha.
Pertussis (?)

This group of diseases is a very artificial one. Typhus and typhoid, *true exanthematic diseases* are excluded from it, whilst other diseases of doubtful origin, and only indirectly allied to the exanthemata, are commonly included in the list.

It is certainly difficult to prove the genesis *de novo* of the zymotic principle in the case of any of the true exanthemata, such as small-pox, measles or scarlatina. In fact, those who entirely oppose the possibility of the spontaneous generation of zymotic poisons, take their stand boldly upon the medical history of small-pox, and point to it triumphantly as a zymotic poison which has spread over the world by contagion alone. I do not evade the force of the argument, but I would ask for an answer to a simple question, Did the first case of small-pox which appeared in the world arise from contagion or from a genesis de novo?

The practical physician knows that no diseases are so apt to lose their distinctive features as some in this group; he knows that several of them, instead of maintaining clearly and distinctly their separate identity by marks as specific as those which distinguish the asp from the adder, are frequently so difficult of detection, that were it not for some accidental light thrown upon the case, its true nature would escape detection. Small-pox appears "sine variolis;" measles "sine catarrho"; scarlet fever, with every symptom suppressed except those connected with the kidney; diphtheria, with every local exudation latent, until revealed just before the fatal termination by the accidental application of a blister. Nay, more; cases of true scarlet fever have slid into diphtheria before death by *continuity* of pathological phenomena, and morbilli may be so incorporated with scarlet fever, as to give rise to a distinct hybrid affection, Rubeola (Rötheln). Nor are these peculiarities confined to the exanthematous group. Malarial affections present the same irregularities as observed in masked agues, local agues, neuralgias

and when complicated with sepsis of the blood, tetanus (*Laycock*). The innumerable nosological varieties of typhus prove that the *ochlotic* poisons must either be very numerous or very varied in their action on the human system.

When we restrict our attention to the well-marked typical cases of each disease, then, and then only, can we say with perfect truth that "the really essential characters of specific diseases and morbid processes remain as persistent as the specific characters of a plant or an animal." How can it be otherwise, considering that various causes may alter the value of each of the four factors Contagium, Conditio, Vehiculum, Corpus. "The contagious poison of all these diseases, like that of continued fever, is liable to great variations,—in efficiency, as seen in the diffusion of epidemics; in virulence, as seen in their mortality; and in specific character, as seen in the most urgent symptomss and most frequent accompaniments of the diseases, as occurring in different seasons." (*Alison.*) To what extent the living system can alter the distinctive character of a zymotic disease, has been shewn already, and evidence of the same fact among the exanthemata is afforded by the behaviour of variola. The contagious matter of this poison induces in the living system of the horse and cow merely a mild local vesicular disease, without constitutional disturbance, and this mild disease, retransferred to man, runs its course in him in the same mild innocent manner. This opens up a very wide question which I cannot do more than indicate, namely, the connection between epidemics and epizootics. Who would imagine that the vaccinia of cows, the grease of horses, the rot of sheep, and probably the distemper of dogs, are the analogues of variola in man? Epidemics and epizootics frequently appear under the same circumstances, but "the analogues in animals of diseases in man cannot in every instance be established." (*Medical Times and Gazette April* 18, 1857). Of many of our most common diseases of the specific class, it cannot be determined with certainty whether they are originally of human or of animal origin.

Unless the spontaneous generation of zymotic poisons be brought in to supplement the law of propagation by continual succession, how can we reasonably account for the appearance of new specific diseases, for the reappearance after very long intervals of former specific diseases, or

for the occurrence of isolated sporadic cases of disease. Cholera is a recent zymotic disease, the Furunculoid Epidemic, which appeared a few years ago, is still more recent, and the Epidemic Cerebro-spinal Meningitis is an affection but of yesterday. If, in order to save an iron and unnecessary theory, these and other facts be forced to look in one direction, then must we voluntarily accept the position of the witty Frenchman, who when told that facts disproved his theory, merely shrugged his shoulders and said "*tant pis pour les faits.*"

Non-conforming facts, a few of which I have attempted to indicate in this hurried note, have led thinkers of no mean standing in the medical world to support *the theory of the occasional spontaneous generation of zymotic poisons as the necessary complement of the contagion theory.* "All contagia" says Dr. Riecke, "under certain circumstances, have a primary origin. This is a fundamental principle." Dr. Farr observes "it must be admitted with repect to all the forms of these diseases (zymotic,) that the body in the cycle of external circumstances through which it passes, may run into them spontaneously, for it is impossible to trace them invariably to infectious sources; it is not *a priori* more improbable that they than other diseases should arise spontaneously, and it is impossible to account for their existence in the world upon any other principle than that of spontaneous generation." Dr. Alison remarks, "In ascribing a contagious property to a disease, we must be careful not to consider it as ascertained that contagion is its only exciting cause. There is good reason to believe that several of the diseases now mentioned (continued fever, small-pox, chicken-pox, measles, scarlatina, plague, erysipelas, dysentery, influenza, cholera) originate occasionally, at the present day, from unknown causes, and perhaps extend themselves in an unknown way, besides being propagated by contagion."

These zymotic poisons, in so far as we have been able to ascertain their nature are organic substances in a state of chemical change; if this be so, they have been generated originally by the living system of man, of animals, or of plants as the result of normal action made abnormal by insanitary influences acting upon the living system or upon organic matter external to it. The primary case of each zymotic disease must necessarily have been a one of the "genesis de novo" of the zymotic poison. Now, it is an established law in the philosophy of causation that similar causes, acting under

similar conditions, will invariably produce similar effects; therefore, whenever and wherever causes in all respects similar to those which first generated the specific poison act under similar conditions, there, and then must result a "genesis de novo" of that specific poison.

Art. VI.—*Contributions to the Practice of Midwifery.* By P. T. Mootoosawmy, G. M. M. C., Fellow of the Obstetrical Society of London, Native Surgeon, Civil Dispensary Manargoody, Tanjore District.

Compound Presentations.—Presentation of the arm and funis with the head. Turning found impracticable. Delivery effected by Craniotomy. Recovery.

I received an urgent call about midnight of the 25th October 1868, from Cotoor, a village ten miles east of Manargoody, to attend one Shunbugummal, a Brahminee, who, it was stated, had been in labour of her 8th child for three days, and whose life was reported to be in danger. Within three hours of the receipt of the summons I was with my patient, whom I found to be of 30 years of age, of fair complexion, short stature, and of spare habit of body.

I ascertained that she was the mother of seven children, three of whom were then living. She stated that the labour-pains set in on the morning of the 23rd, and that they had been strong and frequent up to the afternoon of the 24th when the rupture of the membranes took place; subsequent to which they became weak. Her countenance was dejected, skin dry, tongue parched, and she complained of urgent thirst. Pulse 136, small and quick, uterus large, pains very feeble, and recurring at long intervals. Auscultations afforded no indication of fœtal life. Bowels by account constipated since the morning of the previous day, and urine had been voided but in small quantities. The vulva was enormously swollen, and the passages hot and dry. The os uteri was well dilated, and the uterus firmly contracted around the child, one arm of which was found protruding. The cord also was hanging several inches outside the vulva. It was cold and destitute of pulsation, and the protruded arm (right) also cold and swollen; the head in

the hollow of the sacrum: this, with the arm, was found tightly impacted.

A terebinthinate enema was administered, which produced one very scanty evacuation, and the urine was drawn off with the catheter. I next perforated the head of the child, reduced its contents, and delivered by the craniotomy forceps. The child was a male and large, and the cranial bones strongly ossified. The woman was weak, and small quantities of brandy and water were given to her during the operation. The placenta followed the extraction of the child: the cord measured three feet in length. The uterus contracted firmly. The usual abdominal binder was applied, and the patient made comfortable.

2nd Day.—Slept for 4 or 5 hours after the operation. Pulse 100, skin moist, urine drawn off, lochia free; complained of severe after-pains, which were relieved by an antispasmodic draught.

3rd Day.—Evening. Pulse 120, skin hot, tenderness of uterine region, lochia continue free, œdema of vulva subsided, urine free, bowels inactive, tongue thickly furred. Has been suffering from febrile symptoms since 2 P. M. Breasts rather full and painful. She was ordered a pill of calomel, tartarated antimony and opium at bed time, and castor-oil and oil of turpentine next morning. Fomentations to the uterine region and mammæ, and linseed cataplasm to the latter.

5th Day.—Patient passed a good night. The oil operated freely yesterday. Uterine pain less, and mammæ less tender. Pulse 86, tongue cleaning, lochial secretion continues free, no feverishness. Local applications continued. On the next day, the woman was better. After this she continued to improve steadily, and was able to leave her room quite well on the fourteenth day of her confinement.

Remarks.—Presentations of the arm and funis with the head are to be regarded as very serious complications in albour, involving, as they must, considerable danger to the mother, and almost certain death to the child. In arm presentations, we are told that the rates of mortality is as one to nine; and that one half of the children are lost equally in this presentation as in cases of prolapse of the funis. It is easy to conceive, then, how much more the danger both to mother and child is enhanced when, as in the present instance, both these untoward conditions concur to complicate matters.

Timely assistance may do much to lessen the risk to both child and parent. Unfortunately, in the case under consideration, too much valuable time had been lost: the water had been discharged some fifteen or sixteen hours before I saw the patient, the uterus had firmly contracted on its contents, the protruded arm was cold and swollen, and the prolapsed cord cold and destitute of pulsation. The time when the operation of turning could have been performed with any chance of success had gone by; in fact, from the many indications that pointed to the death of the child, and from the condition of the mother, I felt that I had no alternative but to have recourse to craniotomy.

This case also affords another illustration of the mischievously meddlesome practice of the midwives. How far they were accessory to the production of the state of things described, of course I am not in a position to state; but that an inexcusable amount of hurtful interference had been resorted to, was clear from the condition in which the external organs were found.

The patient narrowly escaped a severe attack of inflammation of the uterus, which at one time she was seriously threatened with. Most of the indications of it were present when I saw her, such as hot and tender passages, frequent pulse, dry skin, parched tongue, aud urgent thirst. On the evening of the third day, she complained of tenderness of the uterine region: the febrile symptoms were more pronounced, and the mammary glands became full and painful. These symptoms, however, yielded to the means employed, and the patient did well.

II.—*Twin Delivery,* first child (girl), presentation head, delivery natural; second child (also girl), presentation arm, delivery by turning; death.

On the morning of the 5th July 1869, I was summoned to a village about 16 miles distant, to afford assistance to a woman in labour. I arrived at the village in about four hours, and ascertained that she had been delivered of a living child on the morning of the 3rd instant, or about 48 hours previous to my visit. She was a thin delicate woman, of the Brahmin caste, about 30 years of age, and the mother of three male children, the eldest of whom, if living, would be 12 years of age.

She presented the following symptoms: skin hot and dry, pulse 148, small and quick; tongue clean, but dry; thirst

urgent; bowels by account had not been moved for two days previously, and no urine had been passed since the previous afternoon. On examination, the uterus was found to be tolerably large, and bladder distended; the passages were hot and tender; the right arm of a second child protruded in the first or anterior dorsal position, and there were no indications of fœtal life. The protruded arm was cold and swollen, the cord of the first child was found shrunken and dried, and the uterus pretty firmly contracted. There had been no return of the pains since the birth of the first child.

I relieved the bladder by a catheter, and administered a simple oily enema, which produced one free evacuation.

The os uteri having been sufficiently dilated, I at once resolved on effecting delivery by turning, in which I succeeded, though not without some difficulty, occasioned by the tenderness of the passages, and the strong action of the uterus, which ensued on the introduction of the hand. Immodiately after the extraction of the child, the pains almost ceased, and becoming so feeble as to be incapable of inducing sufficient expulsive power to throw off the placentæ, these were withdrawn. That of the first child, which was somewhat adherent, was large, and found presenting on its maternal surface a rough, dry and calcareous appearance. Pretty considerable hæmorrhage followed the removal of this, but it was speedily arrested by the local application of cold, by friction and compression, and the exhibition of tinct. ergotæ, with small quantities of brandy and opium.

When uterine contraction was complete, a compress and binder were applied, and the patient made comfortable. She slept for about three hours, after which violent vomiting ensued. This was followed by symptoms of exhaustion, and she gradually sunk and died about six hours after the operation.

Remarks.—This case affords another illustration of the calamitous results that necessarily follow the practice of midwifery by untrained and ignorant women. Had professional assistance been obtained for the poor woman earlier, there is no doubt that her own and second infant's lives might have been saved. No attempt appears to have been made to effect the delivery of the second child. I imagine, that if turning had been resorted to earlier, say an hour after the birth of the first child, and before the uterus had become exhausted, the chances of hæmorrhage would have

been considerably less, though I do not lose sight of the adherent diseased placenta, a condition which doubtless favoured the hæmorrhage.

A very remarkable circumtance connected with this case is that, notwithstanding the heartless neglect with which it was treated, the first infant survived. The woman was seized with the pains of labour on the evening of the 2nd July, and was delivered on the following morning of a healthy-looking female child. For some unaccountable reason, no notice was taken of this child, and while the midwife was sitting in patient expectation of the birth of the second infant, the first was allowed to lie uncared for in the discharge of the mother. It remained in this sad state for nearly 36 hours, when it was detached from the mother by the second midwife, who severed the cord on her arrival.

III. *A Case of Triplets with Remarks.*—I was called about ten o'clock on the night of Wednesday, the 8th September 1869, to attend one Kutchee Beebee, a Mahomedan woman, aged about 30, the wife of a poor betel seller in this town, in her sixth confinement. She was of fair complexion, and of leuco-phlegmatic temperament, with symptoms of anasarca. Face œdematous, conjuctiva pale, the inferior extremities distended with dropsical effusion, the uterine tumour very large, projecting unusually and irregular in shape. The woman was helpless, so much so that she was unable to move in any direction. Pulse 128, small and quick, tongue white, bowels relaxed, moved three or four times daily, urine voided in diminished quantities. Complained of thirst, the abdominal parietes pitted when pressed upon.

The dropsical symptoms made their appearance during the sixth month of her pregnancy, and manifested themselves first on her feet, gradually extending upwards. She stated also that she latterly suffered from difficulty of breathing, which obliged her to keep her bed. The labour-pains had set in about seven o'clock the previous evening, and were stated to have been strong. The liquor amnii escaped about four o'clock of the morning, the head presented, and soon after she gave birth to a living female child. The midwife in attendance, finding the prominence of the abdomen continue, and that another child was still in utero, divided the cord, and secured it around one of the thighs of the mother, and waited for the renewal of the labour-pains, but to her

astonishment, they became suspended. She not knowing how to proceed to effect delivery, I was requested to give my aid.

On examination per vaginam, I felt a bag of membranes protruding through the os uteri, the organ itself being in a quiescent state; auscultation, however, satisfied me that the child in utero was living. I administered two doses of a mixture consisting of tinct. of ergot, brandy, and tinct. of opium with water, fixed an abdominal binder, and ruptured the membranes. The head presented, uterine contractions became re-established, but they were not strong; two more doses of the mixture were repeated, and with a little manual assistance, a second girl was delivered alive. There was some hæmorrhage, but this was arrested by two more doses of ergot mixture. I found that the abdominal tumour was still unreduced: I tightened the binder, and allowed the woman to rest quietly for about half an hour.

At the end of this time, I introduced my hand, and discovered another set of unruptured membranes, with the head of a third fœtus presenting. I broke the membranes, a third female child was ushered into the world: pretty considerable hæmorrhage followed, the woman fainted, but soon revived by a dash of cold water on her face, and the application of carbonate of ammonia to her nostrils. The flooding was stopped by the repetition of the ergot mixture, the contraction of the uterus was secured after considerable difficulty, and still the placentæ were not expelled. On introducing my hand again, I found a small portion of one of the placentæ adherent to the fundus of the uterus; I gently managed the removal of the attached portion, and the whole was separated entire. Contraction of the uterus was further maintained with pressure with both hands for some time, and then compresses were applied on the three sides of the organ, and fixed by a fresh abdominal binder. Two of my female pupils, who were present with me, were directed to keep up alternately the contraction with both of their hands for some time longer, and the woman at length was put to sleep.

There was nothing particular in the after-treatment. Symptoms of uterine inflammation presented themselves, and were attended by constitutional disturbance. The dropsical symptoms did not begin to disappear till the tenth day. They were treated in the usual way, and readily

yielded to the means adopted. She sat up on the tenth day for the first time in four months, or since the dropsical symptoms first appeared, and began to walk about on the 17th day after confinement. The woman continued weak for some time. She was, however, able to leave her room on the 24th day after her confinement.

Remarks.—Cases of triplets are so rare, that I feel it unnecessary to apologize for seeking to have the present one recorded in the columns of the *Madras Monthly*. Possibly, in this country, cases occur with much more frequency than we are aware of, but still they are rare. It is generally believed that this variety of plural births is met with in one of every 4,000 cases. Dr. Ramsbotham, from the results of his own experience which give but 1 in 29,439, is of opinion that the frequency of these cases is much overrated.* This is the second instance which has occurred in my practice. The first will be found recorded in the fourth volume of the *Indian Annals of Medical Science*, page 616.

In both my cases, dropsical symptoms were present, originating, doubtlessly, in undue pressure. In the case under notice, the anasarca was general, and the patient was rendered anæmic and much debilitated. Immediately after the delivery, or on the removal of the exciting cause, the dropsical symptoms began to subside, and notwithstanding that in her very feeble condition she had pretty smart post-partum hæmorrhage, she made a good and speedy recovery.

It is now two months since her confinement, and the woman, with two of her triplets, is doing well. The third died on the twenty-fifth day.

ART. VII.—*The Treatment of Guinea Worm by Carbolic Acid.* By A. PORTER, M. D., Civil Surgeon Akola.

IN the XCV. number of the Dublin *Quarterly Medical Journal*, Mr. Tufnell records a case of death from Septicæmia, following the breaking of a guinea-worm in extraction. In that communication, he designates guinea-worm a formidable disease (which designation I fancy sounds rather strange to, at least, most surgeons in India, who are accus-

* Churchill, 1 in 7500; Dublin statistics, 1 in 4454; German, 1 in 9765; Ramsbotham, 1 in 16,333—ED.

tomed to view the disease much as Mr. Tufnell would a boil), and refers to its treatment by the application of carbolic acid ; quoting a case from the *Indian Medical Gazette,* in which Dr. Costallo extracted the worm in two hours by that method. It is only to show that by the aid of carbolic acid the worm may generally be extracted in much less than two hours, that I would place on record the following half dozen cases, which are taken as they stand in the hospital journal.

In case No. 4, which had followed a number of cases of easy extraction, the worm was placed deeply among the muscles on the front of the leg, and sufficient caution not having been used, the worm broke in process of extraction ; a large quantity of milk-like fluid flowed out (partly under pressure). Carbolic acid was freely applied, and probably tended to check the inflammation, which was by no means very great, certainly nothing like so severe as from descriptions I had been led to expect ; but I cannot say what share the carbolic had in producing this desirable result. The main action of the acid seems to be to coagulate the albumen of the tunica, and so strengthen it, that it bears greater traction ; but it is not in all situations of the worm that the amount of traction that it will thus bear is sufficient to extract it ; hence the accidents in breakage such as that which occurred in case No. 4.

(1.) Money Khan, Constable, aged 25 years, in good health, admitted January 7th, 1864, with guinea-worm on the outer side of the calf of the left leg.

With some difficulty the worm was seized with a forceps, and drawn out a quarter of an inch, when the carbolic acid being applied, it slipped from the forceps and retracted so that it could not be again seized. A poultice was applied, and in two days an abscess pointed, on opening which the worm was easily seized, rolled on a piece of lint, and carbolic acid applied by a probe to as much of the worm as could be got at. Slight traction brought out this, which was rolled on the lint, and the acid applied to a fresh piece, till the whole worm, fifteen inches in length, was extracted at one sitting, and at most, in ten minutes' time.

(2.) Bunnekhan, Constable, aged 25 years, in good health, admitted 17th February 1869, with guinea-worm situated on the back of the left leg at the junction of its lower with

its middle third. The worm being already partly extruded and rolled on a piece of cloth, was extracted in a very few minutes by the application of the acid in the mode described above.

(3.) Kureem Khan, Constable, aged 20 years, in good health, admitted on April 27th, 1869, with guinea-worm situated on the outside of the right leg close below the head of the fibula. About an inch of the worm extruded. This was rolled on sticking plaster, and by the aid of carbolic acid the worm, eighteen inches long, was extracted in less than five minutes.

(4.) On June 5th, the above patient again presented with guinea-worm. On this occasion the worm was placed deep among the muscles on the front of the leg at about half-way from the ankle to the knee. Carbolic acid was used, and about a foot of the worm extracted with some difficulty, when the worm suddenly gave way; fully a dessert spoonful of white milky fluid flowed (partly under pressure) from the part of the worm retained. Carbolic acid was freely applied, but inflammation set in, and was followed by abscess, so that the patient was not able to return to work till July 4th, four and a half weeks after admission.

(5.) Bimaj, Marwaree, aged 25 years, in good health, presented at hospital on 24th July 1869, with guinea-worm on the front of the right ankle. The worm was sufficiently extruded to admit of being rolled on a piece of sticking plaster. Carbolic was applied, and a worm measuring about twenty inches, extracted in a few minutes. The patient would not remain in hospital, but returned to his work, and it is presumed without ill-effect, as he did not again present himself at hospital.

(6.) Gunesh-Sing, Rajpoot Chuprasee, aged 28 years, in good health, admitted August 11th, with guinea-worm situated on the calf of the left leg. The worm extruded sufficiently to allow of its being rolled on sticking plaster. Carbolic was applied, and the worm extracted as quickly as in the last instance. The foot and leg were very considerably swollen, and necessitated the retention of the patient in hospital for six days.

Art. VIII.—*Report of Out-door Patients treated in the Triplicane Dispensary, from 1st January to 31st December* 1868. By Native Surgeon Moodeen Sheriff, G. M. M. C.

(Communicated by Inspector General Indian Medial Department.)

The amount of relief afforded to the out-door patients in this Dispensary during the last year is about the same as that in the two preceding years. Their number was 14,552, which includes—

Europeans and East Indians 970.
Hindoos 5,029.
Mahomedans 7,994.
Native Christians 559.

* * * *

The number of deaths during the year was 20, which resulted from the following diseases :—

Variola 4.	Diabetes Mellitus 1.
Febris Cont. 2.	Epilepsia 1.
Diarrhœa 2.	Vulnus 1.
Paralysis 2.	Abscessus 1.
Hernia 2.	Venenatio 1.
Anasarca 1.	Morsus Canis 1.
Dentitio 1.	

Many of these cases were brought to the Dispensary in a dying state, and would not have been recorded in the register, were it not for a dose or two of medicine they received from the institution. I shall explain all these deaths under their respective heads.

The number of Police cases, or cases brought by Police to the Dispensary, either for treatment or examination, was 90. Most of these were cases of wounds and bruises, inflicted generally by sticks or by carriages running against the persons walking in the streets and roads. There were also several cases of Ebriositas and Morsus Canis from rabid dogs; some from Ambustio; and two of criminal assault on women.

Three of the Police cases have proved fatal; one from Tetanus, the result of a severe laceration of a hand; one from Hydrophobia, after a bite from a rabid dog; and the third from compression of the brain.

In addition to very severe injuries to the head (six fractures of the skull, &c.), the last case was complicated with ebriositas, and is therefore important in a medico-legal point of view. I shall make a few brief remarks upon it here.

The patient in this case was a man named Appavoo, about 30 years of age, and was brought to the Dispensary on the 25th July, between 1 and 2 o'clock in the morning. He was said to have received injuries to the head after drinking and fighting with one of his comrades. He was extremely comatose, with stertorous breathing, slow and intermittent pulse, and a cool and perspiring skin. On removing the long hair he had on his head, there was a swelling all over the skull, with a bruise and some discoloration on its right side. There was also some swelling about the right eye and cheek. There was no depression or irregularity in any part of the skull, nor was there any bleeding either from the nose or ears. The patient smelt of liquor, particularly in his mouth.

Although the case was beyond the reach of medical treatment, I spared no trouble in trying to relieve him. A stomach pump was used, and the stomach emptied of its contents, ice applied constantly to the head, and a purgative enema administered. The patient did not improve in any respect, but died after 5 o'clock in the same morning.

A coroner's inquest was held in the evening, when the body was examined by dissection with the following result:—

On removing the scalp, there was a thin coagulum of blood all over the vertex of the skull, and the latter fractured in no less than six places. The fractures were simple without depression, and the broken pieces of bone were not loose. These pieces, however, separated from each other when the calvarium was removed by sawing and chiselling. The longest fracture was along the coronal suture, separating the frontal from the two parietal bones. The right parietal bone was fractured in three places; the left in one; and the sixth fracture was situated in the occipital bone. The sagittal and lambdoid sutures were more or less involved in four fractures. The whole upper surface of the brain was covered with thick and coagulated blood, and there was also some effusion of the same fluid at the base of the organ. There was nothing particular in the substance and ventricles of the brain. All other organs in the body were quite healthy.

When I gave my evidence and opinion in this case before the Coroner for Madras, he expressed great satisfaction at my having used the stomach-pump, without which I could not have stated positively that the liquor the patient had taken had nothing to do with his death. Besides this, when the case underwent a trial before the Chief Justice of Madras, the prisoner himself asked me—'Was he not drunk when brought to the Dispensary?' meaning apparently drunkenness was also a cause of this death. From the precaution I took in the treatment, I was able to answer this question decidedly in the negative.

The prisoner in this case was a young and strong man, and the injuries were inflicted by a short, thick and heavy stick. The thickness of the stick, together with the long hairs and a cloth which the patient had on his head when he received the blows, account for the non-existence of more severe injuries externally than a mere bruise, swelling and discoloration.

36 was the number of Coroner's Inquests I attended during the year 1868, and it is more than that of 1867 by seven. It includes the three Police cases which have, as already mentioned, terminated fatally. All these cases may be arranged according to their frequency as follows :—

Drowning	8
Injuries to the head (compression and concussion of the brain)	6
Ambustio	4
Traumatic Tetanus, from injuries and burns ...	4
Infanticide	3
Hydrophobia	2
Snake-bite	1
Venenatio	1
Strangulation	1
Ebriositas	1
Hanging	1
Renal Dropsy	1
Rupture of intestine, from the wheel of a carriage passing over the body	1
Gangrene of hip-joint	1
General debility	1

EPIDEMIC DISEASES.

With the exception of a few sporadic and very doubtful cases of Cholera, the 4th District was remarkably free from that disease during the last year. But, unfortunately, its absence was more than compensated by the prevalence of Small-pox and Measles. These diseases have prevailed to a fearful extent, and the havoc they have made on the population of the district is more than that on any occasion within the memory of the inhabitants.

VARIOLA.—Small-pox has been prevailing in the district, more or less epidemically for the last two years. I have spoken of its prevalence in 1867 in my last Annual Report. The same prevalence continued and increased during the last year to the extent I have just mentioned. It was at its height in the months of February, March, April and May, when the heat of the weather also, being pretty high, added greatly to the suffering of the patients. The disease did not cease to be epidemical till about the beginning of October, and then continued sporadically until the end of the year.

The type of the disease during the last epidemic was very severe, generally confluent, and often malignant. In some cases of the latter kind, it proved fatal in the eruptive stage. As usual, it has prevailed and committed its ravages to a much greater extent in the population of children and youth under the age of puberty; but at the same time, it was neither scarce among adults, nor has old age been quite exempted from its attacks. Many adults have been attacked by, and fallen a victim to it; and I have also heard of some cases and one or two deaths among the old.

Suffering from other diseases was no protection from Small-pox, and this was particularly the case while the patients were already laboring under fever. There is a general belief that the presence of chronic and severe skin diseases, as leprosy and psoriasis, produces an immunity from small-pox. If this is true at all, there were some exceptions to it in the last epidemic. Previous vaccination did not afford an exemption to its usual extent. I have heard of many cases of Small-pox, and know some myself, among those that had been vaccinated. These cases, however, were generally mild, and of modified form, and I am not aware of any death amongst them.

The number of admissions and deaths from this disease among out-door patients was 17 and 4 respectively, which is very small in comparison to its great prevalence and mortality in the district. This is owing to the great apathy exhibited by the natives of this country in seeking for medical advice in cases of eruptive diseases. They generally allow the patients to go through these diseases without medicine, and chiefly depend upon cooling diet and drinks. All the patients in fatal cases were children between two and four years of age, and were in a most hopeless condition when they were visited by me. They were, however, entered in the Record on account of their receiving a few doses of medicine from the Dispensary.

My plan of treatment in Small-pox has been the same as generally adopted, but with this difference, that I have paid much greater attention to supporting the system than usual. According to the circumstances of the patients, they were ordered to use port-wine, broth, soup, beef tea, &c. from the commencement, and the system thus supported appeared to endure the disease in all its stages more safely than otherwise.

Morbilli or Rubeola.—As already remarked, Measles has also prevailed to a very great extent, and although the mortality it has produced is less than that of Small-pox, yet it was very great when we consider the comparative mildness of the former. Measles, as generally observed in the natives of this country, is a mild disease, and a death from it is, therefore, a rare event amongst them. This is according to my experience of the disease for many previous years, but it was quite the contrary in the epidemic of last year, when a great many deaths (50 or more in the district) were heard of. I have not seen any fatal case during the whole epidemic, though I had more than thirty cases under my own observation; but from repeated inquiries, I have learnt that Diarrhœa was the immediate cause of death in most of the fatal cases among the native children. Diarrhœa, then, which is generally looked upon as a favorable termination of Measles, was very unfavorable during the last epidemic, and carried off more patients than any other sequela of the disease, including the pulmonary affections. Irritation of bowels was certainly a prominent feature of the last epidemic; it was present in many of my own cases, and in some of these, made its appearance as early as the eruptive stage.

When the epidemic was the greatest during the first and second quarters of the year, the disease occurred in all its forms. In many cases, the color of eruption was more livid, or darker than in others. This seemed to correspond with the Rubeola Nigra of authors, but with this difference, that in the great majority of such cases there was no malignancy, as is generally considered to be the case with that form in Europe. Although not generally malignant, the darker variety was always more severe with reference to both copiousness of eruption and febrile excitement. The eruption was also more elevated, and the mark or discoloration of the skin resulting from it was very durable; so much so, that some patients were distinctly recognised as having suffered from Measles long after a month.

There were some cases of Rubeola-sine-Catarrho, in which the catarrhal symptoms were little or not at all manifested and there were also a few in which the eruption was either exceedingly slight or wholly absent. In addition to these, there was another variety, which may be called modified Measles, because it was more or less modified in its course and symptoms, and occurred only in those that had already suffered previously from Measles. As the occurrence of Measles for the second time and even for the third, was not very rare during the last epidemic, the variety I have just named was observed in several cases.

From my experience of the last epidemic, I find that the eruptive stage of Measles is somewhat shorter in the natives of this country than in Europeans. The eruption in the former generally begins to fade on the fifth, often on the fourth, seldom on the sixth day; and I have not seen any case in which it remained undeclined on the upper extremities till the seventh; whereas the seventh, I believe, is the commonest day in Europe on which the eruption of Morbilli declines.

During the whole epidemic, only 18 cases were admitted in the Dispensary, and the number of other cases I saw in the district was about the same. This is not in proportion to the great prevalence of the disease, and I have already explained the cause of it in my remarks on Variola.

Varicella.—Chicken-pox is another disease which has prevailed epidemically about the same time when Small-pox and Measles were raging in the district; but, as usual,

it was neither much noticed, nor heard of, on account of its great mildness. I have not seen myself more than a few cases of it, but from inquiry, I am aware that its prevalence was pretty extensive during the above period.

The prevalence of all the above diseases (particularly Small-pox and Measles) together, as was the case during the last year, is not of rare occurrence; indeed, during my experience of upwards of twenty years, I have never witnessed either of these diseases to prevail to any great extent with a complete absence of the other; while on the other hand, they have often broke out almost simultaneously, and prevailed together nearly to the same extent. I infer from this, that although they are two distinct diseases, each depending upon a different specific cause, yet the circumstances, whatever they may be, which are favorable to the epidemic of the one, are also favorable to the prevalence of the other.

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TREATMENT OF DYSENTERY BY VEGETABLE AND NAUSEANT EMETICS.

Before I speak of any other disease, I wish to make some remarks here, in a special manner, on the treatment of Dysentery.

The use of Ipecacuanha in large doses in Dysentery, which had been revived a few years ago in this Presidency, is, in my humble opinion, a great improvement in modern practice, and I am glad to state that I have now found a few other medicines, which are also vegetable and nauseant emetics, and possess the same effect in that disease. All these medicines are indigenous to India, very cheap, and commonly found in every bazaar, garden, and field; and therefore, more interesting to be acquainted with in this country, than the Ipecacuanha itself.

Like Ipecacuanha, these medicines are not always sufficient to effect or rather complete a cure in Dysentery by themselves, but generally require the assistance of some other medicines, particularly Opium. I almost always prescribe them with the latter from the commencement of treatment, and in ordinary cases they check the progress and mitigate the symptoms of the disease in three or four days; and then the cure is completed in 5 or 6 days more, either by the same medicines, or by the use of Dover's Powder or some other preparations of Opium. In slighter cases, the

disease itself is often checked in a few days, and requires little or no other medicines afterwards. In some severe and obstinate cases, however, when the disease lasts longer than a week or so, or assumes the chronic form, the use of other medicines is always necessary.

These medicines are all nauseant-emetics like Ipecacuanha, and their *modus operandi* is the same as that of the latter, viz., that they relieve the dysenteric inflammation—

First, by reducing the force of general circulation, partly by depressing the system, and partly by determining the blood to the skin;

Secondly, by reverting or diminishing the peristaltic motion, and thereby giving rest to the inflamed bowel;

Thirdly, by increasing the secretion of mucus from the extensive surface of the bowels, and thus restoring to its normal condition the morbid capillary circulation of the affected part.

Every nauseant emetic will more or less possess the actions in the first and second axioms, and, if it is not irritant at the same time might subdue the dysenteric inflammation to some extent. But, unless it also possesses the action in the third, it will not be so useful in Dysentery as to deserve a special notice. It is the latter action which makes Ipecacuanha and other emetics under discussion, peculiarly useful in that disease.

The emetics I allude to, are the produce of the following plants:—

Randia dumetorum.
Tylophora asthmatica.
Strychnos potatorum.
Calotropis gigantea.

1. *Randia dumetorum.* The nut of this plant is well known in the bazaar by the Hindustani and Dukhni names *Máin-phal* and *Maind-phal.* After much experience, I have found the dry mucus or pulp of this nut, not only to be a very good emetic, but also a good substitute for Ipecacuanha as a remedy in Dysentery in large doses. It is certainly not a good emetic, nor quite free from irritation, if used, as is generally done, by powdering the whole nut. The thick pericarp or shell, and the numerous hard seeds of the nut, are not emetic at all; indeed, if any thing, they are slightly irritant; but only the dry pulp or mucus, which is the least part of the fruit, possesses the emetic and nauseant properties.

After breaking and removing the shell, the seeds and mucus will be found as a hard lump, and the two latter cannot be separated from each other, except by dissolving in water, or powdering and passing through a sieve. The lumps of two or three nuts is generally a dose of the medicine as an emetic. They should be bruised, macerated for 10 or 15 minutes in two or three ounces of water, rubbed with the fingers, and then strained through cloth. The mucus being very soluble in water, passes off with it, and the numerous and extremely hard seeds of reddish brown color, with some resinous and other insoluble matter, remain on the cloth. The draught is now ready for use: if given to a patient, it produces nausea and vomiting in about ten minutes, and very free emesis is produced if assisted with warm water.

The whole of this draught, or half of it, with thirty or forty minims of Tincture of Opium, is to be given in Dysentery, three or four times in 24 hours, according to the emergency of symptoms, and to be continued till they are checked or abated. The draught with Tincture of Opium produces nausea, but not much vomiting.

The best and most convenient way, however, of using this medicine, is in powder, which is prepared as follows :—

The lumps of seeds should be well bruised, and passed through an ordinary sieve or thin cloth. By this means, all the seeds will be separated. The coarse powder thus obtained should be powdered again, and sifted through a fine sieve or very fine cloth. The powder is now fit for use, and should be kept in a stoppered bottle.

From forty to fifty grains of the above powder is a very good emetic, and in every respect equal, if not superior, to Pulvis Ipecacuanhæ. The formulæ I have used in Dysentery are as follow :—

℞ Pulpæ Randiæ dumetorum, gr. xxx.—lx.
Tinct. Opii, ♏. xxx.—lx.
Aquæ, ℥i.—ii. ft. Haust.

to be given three or four times, or oftener, in 24 hours, according to the severity of disease.

℞ Pulpæ Randiæ dumetorum, gr. x.—xx.
Opii, gr. i.—ii. ft. pil. i.

to be given every three, four or six hours according to the urgency of symptoms.

I have used the above medicine in many out-door patients, but none of them were under my constant observa-

tion, and I shall not, therefore, detail any of their cases. I shall, however, give here a case of an in-door patient, which was treated with the dry pulp of Randia dumetorum, and was solely under my charge, through the kindness of the Medical Officer in charge of the Dispensary and 4th District.*

* * * *

2. *Tylophora asthmatica.*—About three years ago, when I had an occasion to write upon native medicines, I made the following remarks upon this plant :—

'It is the best substitute we possess in this country for Ipecacuanha, both as an emetic and as a remedy for Dysentery in large doses. From twenty to forty grains of its powder, with the same quantity of Tinctura Opii, three or four times a day in 24 hours, checks the disease as speedily and successfully as the Ipecacuanha.'

From my subsequent and more extensive experience of native drugs, I have found that Tylophora asthmatica is not the best, but one of the four best substitutes in this country for Ipecacuanha; and that although the whole plant including the follicles, is emetic, the root alone is very useful in Dysentery.

Tylophora asthmatica, however, is not very useful in the ulcerative and sloughing stages of Dysentery. I have used it once in these stages, and though it altered the evacuations and lessened their frequency for some days at the commencement, it did not check the progress of the disease. I shall insert this case here* partly to illustrate what I have just stated, and partly to show how useful chlorodyne is sometimes in Dysentery. In fact, the patient was dying from sloughing of bowels on one hand, and tormented with a constant and very obstinate hiccup on the other, when I began to use chlorodyne, and it not only relieved the latter symptom, but was also the means of saving the life and curing the disease.

* * * *

3. *Strychnos Potatorum.*—The dry berries of this plant are familiarly known in the Indian bazaars under the Hindustani and Dukhni names *Nirmalee* and *Chilbeenj.* The whole berries are generally powdered and used as an emetic in Southern India; but when they are used in this way, they are far from being a good emetic. After many trials,

* Omitted for want of space.—ED.

I have found the seeds to possess no emetic action at all. The thin pericarp or testa is the only part of the fruit which is emetic. The powdered testa is also a substitute for Ipecacuanha in Dysentery. The testa is very thin, and easily separated from the seeds by the fingers. It should be selected from new, well-matured, and dry seeds; powdered, passed through a fine sieve or cloth, and kept in well-corked or stoppered bottles. This is the best vegetable emetic in India, and a good substitute for Ipecacuanha in Dysentery.

The dose and manner of using this medicine as an emetic and in Dysentery is the same as Pulpa Randiæ Dumetorum.

4. *Calotropis gigantea.*—According to the suggestion of Sir W. B. O'Shaughnessy in the Bengal Dispensatory, I have also used this medicine in some cases of Dysentery, and found it in large doses to be a good substitute for Ipecacuanha. I have used it in the same dose, and in the same way as the dry pulp of Randia Dumetorum.

The bark of the root of this plant is the best and most useful part for medicinal purposes, and it should be selected from the oldest plant; because, the older it is, the more active is its bark. If the bark be powdered by simply drying it, as is generally done, it requires to be used in much larger doses to produce its proper effects. The thick, rough, and spongy epidermis, which it is covered with, and which is quite inert, should be scraped off with a knife before it is powdered. The powder prepared with this precaution, is white, and bears a great resemblance to the flour of rice, has an acrid and nauseous smell, and bitterish taste. It should be preserved in stoppered bottles.

MIASMATIC DISEASES.

Miasmatic diseases were more numerous during the last than in the preceding year, but the number of deaths from them was less by two. The latter would have been still less, had it not been for the great prevalence of small-pox in the district, which I have already explained.

Febris Intermittens.—There were only 353 cases of this disease admitted during the year, which are much less than their number in 1867. The reason of this is that there were all genuine cases of febris intermittens, and no cases of febris ephemera were added to them, as was the case in the preceding year.

Febris Continua.—Out of 338 cases treated, two terminated fatally. In one of these, the supervention of peritonitis was the immediate cause of death; and in the other, the patient 'died from heart disease after several relapses of the fever.' In the last case, the patient was under treatment for 46 days.

Dysenteria.—The number of admissions from Dysentery was 123, the whole of which were either cured or relieved, and no death occurred amongst them. I have already spoken of the treatment of Dysentery in this Report.

Diarrhœa.—215 cases were admitted, 103 cured, 104 relieved, 6 absented, and 2 died. Diarrhœa, when not a symptom of or complicated with other diseases, has readily yielded to the ordinary treatment. Pul. doveri with pil. hydrarg. was the medicine frequently used among adults, and pul. cretæ aromat. c. opio among children. Some of the cases in children were very severe and complicated, and it is among these that two deaths have occurred. In one fatal case the child was about 1½ years old, had been ill previously with pertussis, and was much neglected by its friends. In the second case, the child was about the same age, and died from head symptoms and emaciation after suffering for many days from diarrhœa, which was originally the result of dentition.

Rheumatism.—Rheumatism is one of the three diseases which mostly swell up the number of admissions every year. The two other diseases are Obstipatio and Dyspepsia.

The number of admissions from Rheumatism was 1447, which is slightly in excess of that of the previous year. By far the greater number of these cases was from muscular rheumatism, which was generally partial and slight, and easily relieved by purgatives and liniments. About ¼ of the remaining cases were gonorrhœal, and they were chiefly in the male sex between the age of 20 and 40 years. All others were cases of the common articular rheumatism, arising for the most part from exposure to cold and wet. The disease in these cases was generally of a chronic kind, being either of long duration, or not attended with febrile symptoms. There were only a few cases of acute rheumatism, and among these only once have I seen some tendency to cardiac affection.

In all the cases attributable to gonorrhœa, iodide of potassium was much relied upon for relief, and in all others,

the alkaline treatment, including nitrate of potash, with or without opium and colchicum, was adopted, and generally with great advantage. In a few cases, however, the above remedies were not of any avail, till the system was slightly affected with mercury.

DIATHETIC DISEASES.

Anasarca.—The occurrence of this disease was mostly among the poorer class of people, and with the exception of a few cases, it was the result of anæmia and general debility. In the exceptional cases, it was depending upon disease of the heart, kidneys, liver, or spleen ; and in one instance, was complicated with profuse hæmoptysis.

DISEASES OF NERVOUS SYSTEM.

Hydrophobia.—Although no admissions and deaths from Hydrophobia are shown in the Return, yet two cases have proved fatal from this disease. In both cases the patients were bitten by a rabid dog, and were entered in the Register under Morsus Canis. One of these patients was attacked by hydrophobia and died before the wounds were healed, and his death therefore is marked under the former disease (Morsus Canis). The other patient died of hydrophobia after he was discharged from the Register, and is consequently included among the cases of Coroner's Inquest. I shall speak of these deaths again, as well as of the prophylactic treatment of hydrophobia under the head of Morsus Canis.

* * * *

Tetanus.—The number of admissions from Tetanus during the last year was seven. Of these, three were traumatic, and four idiopathic. The result of treatment as recorded in the Return is, two cured, four relieved, and one no better. In the cases marked as relieved, the ultimate result is not known, but the patients appeared improving when their friends discontinued to bring them to the Dispensary.

The most important point connected with this disease is its treatment, about which I wish to make a few remarks. The number of cases of traumatic and idiopathic tetanus I have treated during the last ten years in the Triplicane Dispensary and 4th District, is very great, and I was thus afforded an opportunity of testing the value of several plans of treatment generally in use. After much observation,

I am satisfied that the use of antispasmodics with stimulants is not only the most rational, but also the most successful plan of treatment in tetanus. In all the cases in which the patients were able to buy any medicine I order, I have used the following prescriptions, assisted freely with port-wine, jugged broth, beef-tea, &c.

℞. Musk, gr. iii—vi.
Saffron, gr. vi—xii.
Assafœtida, gr. ii—iv.
Extract of Hyoscyamus, gr. i—ii.

to be made into one pill and given every hour, every two, three, four or more hours, according to the frequency and severity of spasms.

Although this prescription was made into pills and kept ready for the sake of convenience, the latter were generally dissolved in water when they were administered. In some cases, when the patients were not able to procure more than a small quantity of musk, it was used only at the beginning for a day or two, and then the prescription continued without it, but with the increase of one or two grains of assafœtida, and no apparent disadvantage was experienced from this alteration.

If the patients were poor, and required to be treated with medicines from the Dispensary, either in the hospital attached to the Institution or in their own quarters, opium was the medicine I chiefly relied upon, and prescribed it in the following combination :—

Tincture of Opium, ʒi.
Country arrack, ℥i.
Water, ℥i.

made into a draught, and given eight times in 24 hours.

Diet—Jug broth, common broth, soup, conjees, &c.

The difference I found between the above prescriptions was, that the use of opium was attended with much constipation, and in one case with strangury; while the medicines in the first prescription were not only free from these untoward symptoms, but often kept the bowels pretty regular in their function.

Before commencing with the prescriptions, the bowels were cleared by a purgative, and the medicines generally adopted for this purpose were turpentine and castor oil, in the proportion of one to 1½ ounces. Purgatives were seldom or never used again even after three or four days constipation, unless they were called for to relieve the un-

easiness of the abdomen from distention or flatulence. Enemata were found to be the best mode of using purgatives during the course of treatment, because they did not interrupt the use of the medicines by mouth. Whether a purgative was used by mouth or rectum, I have always combined the oil of turpentine with it, on account of its antispasmodic and diuretic actions.

In conclusion of my remarks on the treatment of Tetanus, I beg to state that I have used the Indian hemp, and seen also others using it, in a great many cases; and it is not without sufficient reason that I have adopted the plans I have described above in preference to it. The use of opium and other antispasmodics I have mentioned in Tetanus, is not novel; perhaps they are the oldest medicines used in that disease, though they may not have been employed in the same way as they are by me with very large doses of stimulants.

Diseases of Respiratory System.

Asthma.—In my last Annual Report, I have spoken of ammonia in the treatment of Asthma. During the last year, I have used it more frequently than in any other previous period, and found it to be more useful than I thought before. Carbonate of ammonia is preferable to the liquor, and the former given in ℈ii. doses, relieves the paroxysm of asthma immediately. If necessary, it may be repeated with a short interval.

Diseases of Digestive System.

* * *

Diabetes Mellitus.—In the fatal case from this disease, the patient was the late 'Examiner Moonshee' of Government (Ghoolam Hossain). He was very ill for some time before his friends sought for my advice. When I first saw him on the 9th June, he was 'in great danger from sloughing of cellular tissue, &c., on the back, where the spine and ribs were almost exposed.' The right shoulder and upper arm were also much swollen and altered in color, with infiltration of matter. The patient was partially insensible, delirious, and extremely emaciated. His pulse was between 108 and 120, and skin cool and moist.

From the above symptoms, as well as the previous history of the patient, I thought that it was a case of Diabetes mellitus, and on examining the urine a few hours afterwards, it was found to be over-loaded with saccharine matter.

Knowing the carbuncles he was suffering from to be merely local manifestions of Diabetes mellitus, as is generally the case in the advanced stage of that disease, I began to treat the latter at once, and paid much greater attention to it than the former. In a few days, he so far recovered, that a hope of his recovery was entertained. On the 25th June, his condition was, 'fast improving, is able to sit up without assistance, takes all the animal food ordered, urine much less in quantity, the carbuncle on the back is clean and filling up with granulations, and the arm is much better with little or no discharge from the opening.'

Unfortunately, the symptoms of dysentery supervened about the beginning of July, and were soon followed by those of dropsy; and the man died on the 17th of the same month.

DISEASES OF URINARY SYSTEM.

Fistula in Perineo.—Under this head a case of recto-vesical fistula was admitted. The subject of this case was an East Indian man (G. W. J.), who was formerly in the Collector's Department at Madras. By straining he used to pass his urine through the rectum. He told me that the fistula was the result of dysentery, from which he appeared to have suffered some years previous to his admission; but I have reasons to disbelieve this statement. It was very likely the result of a puncture of the bladder by the rectum on account of a stricture of urethra, which, I believe, he had been subject to at one time; and I know more than one case of this kind resulting from the operation just named.

* * * *

ACCIDENTS.

Vulnus.—Numerous cases (221) of wounds were treated in the Dispensary. They varied from the slightest solution of continuity to extensive lacerations and incisions of the soft parts, and were often multiple. All have been cured or relieved, except one, which has proved fatal. This is the same case which is already noticed under the head of Police cases as having succumbed to an attack of Tetanus after sustaining a severe injury in a hand.

Among many severe cases cured under the head Vulnus, there was also one of lacerated wound of the thorax, with a hernia of the lung. In this case, the wound was across the chest near the left nipple, and its length externally and internally was about three and two inches respectively.

The internal wound or opening into the chest was between two ribs, through which a portion of a lung, corresponding with the length of the wound, protruded. I returned the lung; closed the wound with sutures, straps, and compress; and then applied a broad bandage around the chest. The patient was directed to lie generally on the left side, and to take a draught three times a day, which contained opium with a small quantity of tartar emetic. He was quite well in about a month.

Venenatio.—Of the two cases admitted under this head one was cured and one died. In the first case, an old woman attempted to put an end to her own existence by eating a few seeds of dhatura after quarrelling with her daughter-in-law. The fruits she selected, however, were very tender, therefore she did not suffer much from their effects. When brought to the Dispensary, she was dull, stupid, and slightly delirious with irregular pupils; and was in health again soon after a strong dose of emetic. The second was a case of accidental poisoning by opium. The patient was a female child about three years old, and was suffering from dysentery or diarrhœa, when its mother gave a little opium by guess, which was too much (1½ or 2 grains) for the age, and finally proved fatal. When the child was brought to the Dispensary, it was not able to swallow anything, except by drops; and an emetic given to it in this way had no effect. I tried my best to procure a stomach-pump suited for children, but without success. Cold douche and other means at my disposal were tried perseveringly, but without much avail.

Morsus Serpentis.—The three cases of Snake-bite which are marked in the Return as admitted during the last year, are of doubtful nature. When seen, the patients had neither the symptoms of snake-poison, nor did they know for certainty by what kind of snakes they were bitten. In each case, however, a dose of Tylophora asthmatica was given as a precautionary measure, and no more attention paid to them.

Morsus Canis.—Of the 39 cases of Dog-bites recorded in the return, seven were from rabid dogs. Five of these have occurred in the same place, Mylapoor, and on the same day, 22nd August, when they were brought to the Dispensary by Police. The dog which inflicted the wounds in these cases must have been very furious, for there

were more than twelve bites in some cases, and they were all very severe, lacerated, and bleeding pretty freely. From the above nature of wounds, I did not incise or enlarge them any more, but applied nitric acid freely,—and a poultice over them. According to the age of the patients, from two to five grains of the powder of *Alangium decapetalum* were given internally three times a day for some days; and above all, they were ordered to avoid, as much as possible, cold and wet; such as getting wet in rain, bathing in cold water, and sleeping in damp and cold places. They were particularly informed that the rainy weather for two or three years had been the most perilous period for the attack of hydrophobia, and they were, therefore, not only to avoid exposure in that weather, but also to keep themselves very warm, and even use warm water for drinking.

A few of the above patients have attended at the Dispensary regularly till they were well of the wounds, and a few others only for some days; but the whole seven, I believe, have more or less attended to the precautions given to them with reference to the exposure of cold and wet.

Besides these seven cases, in which there was no doubt as to the nature of the dogs, there were a few other cases of bites from suspicious dogs; and except two, all these have escaped the attack of Hydrophobia up to the date of this report.

The two cases attacked by hydrophobia have proved fatal, and these are the same which have been referred to in my remarks under that disease. As they lived far away from the Dispensary (Mylapoor), I was not aware of their being attacked with hydrophobia until after their deaths. One of these cases occurred in September, and the other in October, and though there was no rain on the days of their attack, yet the weather was very cloudy, and there were one or two showers a few days previous to each attack.

Whether the immunity in all other cases, including the remaining five bitten on the 22nd August, is permanent or not, remains to be seen; but I have reason to expect that it will be permanent, at least, in most of them, if they rigidly avoid cold and wet according to my directions. The rainy season, and exposure to cold and wet in any season, are the most common exciting causes of hydrophobia, and their avoidance is consequently a great preventive measure

towards that disease. I make this remark from personal experience of a great many cases of bites from a rabid animal under the following circumstances :—

In 1854, at Bellary, one day about four or five o'clock in the morning, a fox from an adjacent jungle got into the Cavalry lines and the Commissariat bazaar in that station, and bit a great number of persons who were sleeping without closing the doors of their huts; and it continued to bite till long after sun-rise, when it was killed.

This unfortunate occurrence was followed by a greater calamity about fifteen or twenty days afterwards, when there were some showers of rain with the interval of a few days, and each shower gave rise to some cases of hydrophobia among those bitten by the fox, and left no doubt as to the condition of the animal. There were several cases of the disease again when the regular monsoon had set in a few months afterwards, and it was the same case in the rainy weather of the next year. Although some cases had also occurred in the intervals between the above periods, they were very few in comparison to the number of other cases.

The number of persons bitten by the fox was more than thirty, and about half of these had been attacked and died in a few days. In treating some of the latter cases, no English or Native remedy which is known to have any influence over hydrophobia was spared; but none proved successful when the disease was once developed in the system. In some cases, the attack of hydrophobia was sudden, without any previous warning; but generally the confirmed stage was preceded by some precursory symptoms, such as numbness or a peculiar and uneasy sensation in the cicatrix, feverishness, slight pain in back and neck, and headache with some anxiety of mind. In this latter stage, I had succeeded in preventing the attack of hydrophobia in two cases, by cutting out the whole cicatrix in which the morbid sensation was felt, and then confining the patient to a warm room with a free use of diffusible stimulants (ammonia and ether).

Since the above experience, I have always warned the persons bitten by suspicious animals to avoid cold and wet, and to keep themselves unusually warm, &c. in the manner I have already explained; and among many such patients I have had under my observation, I do not know any to have suffered from hydrophobia except the two cases during the last year.

THE MEDICAL FACULTY OF THE MADRAS UNIVERSITY.

Some thirteen years has the Madras University been in existence. In the faculties of Arts and Law, especially, there have been steady but gradual additions to the number of graduates, but in regard to the faculty of Medicine, the University, for all practical purposes, might just as well have been non-existent all these years. It is true that the Madras University can boast of more than one M.B. and C.M.; (there are, we believe, two persons living, upon whom these degrees have been conferred,) but it cannot be said as yet to have entered upon its mission of encouraging a fair standard of medical education amongst the natives of the country. In the few graduates who have issued from its portals, the University has been singularly unfortunate. Drs. Flynn and Gorman, two very worthy members of the Subordinate Medical Department, both died soon after graduation; of the present two graduates, one has obtained admission into the commissioned ranks of the Indian Medical Service, while the other, a native gentleman, has not as yet succeeded in getting suitable employment either in the service of the State, or of the public. The undergraduates, up to date, notwithstanding the inducements which Government scholarships in the Medical College hold out to needy men, are by no means numerous, and altogether, we are satisfied that the Medical faculty of the Madras University is not in a sound or healthy condition.

It is very true that the medical profession is one that does not stand high in the esteem of the native community as a money-making profession. On this side of India, whatever may be the practice elsewhere, natives have a great repugnance to pay for medical

services in the ratio which other professional services, as of the law, are paid for. The few Native Surgeons who have been educated at the Medical College, complain that private professional labour is practically unremunerative. It is not so in Calcutta and Bombay, which are more important centres of wealth and commerce ; but here, where rich men are scarce, and the poor are very numerous, there has not as yet arisen amongst the native population a demand for the services of expensively trained medical men. And the Government too, we think, has been somewhat inattentive to the claims of its native medical subjects, who have wished to follow the highest professional education within their reach.

In Bengal and Bombay, the grade of Sub-Assistant Surgeon, which is open only to Licentiates or Graduates in medicine of a university, affords employment to a very considerable number of medical men. In Bengal alone there are nearly *two hundred* so employed. In the Madras Presidency, the establishment of Sub-Assistant Surgeons is limited to *eighteen*, and of this absurdly small number, about one half of the appointments, from causes we have never been able to fathom, have not been filled up. The practice in Bengal and Bombay has been to foster the higher education of the Sub-Assistant Surgeons and independent practitioners of medicine, to the neglect, in a measure, of the training of those persons employed in the subordinate medical duties of Government establishments. In Madras, on the other hand, the chief aim has hitherto been to educate the members of the Subordinate Medical Service to a standard fitting them to discharge the duties of independent practitioners to the almost total neglect of the higher grade. Our college-trained subordinates have, in practice, been made to take the place of Sub-Assistant Surgeons in the other presidencies. They have been educated to fill civil and independent charges, and as

a rule, have acquitted themselves very fairly of their duties; but the practice of employing subordinates for the higher duties of the profession instead of Licentiates or Bachelors of Medicine, has, we make bold to say, tended very much to hinder the development of the medical faculty of the University.

The University authorities we conceive, have not been blameless in regard to the present condition of its medical graduates list. The standard of examination has, from time to time, been unnecessarily raised. When the University was incorporated, it possessed the power of examining candidates for the diploma of Licentiate in medicine. The sister universities of Calcutta and Bombay retain, we believe, to this date, the privilege of granting this diploma; in fact, the great bulk of the graduates in those places go up only for that minimum test of ability to practice the medical profession. But here in Madras, a few years ago the University Senate resolved, for reasons unknown to us, to abolish the examination for the licence in medicine, and now, every Sub-Assistant Surgeon who has not risen from the Subordinate Medical Service, or undergraduate in medicine, is required to proceed to the degree of M. B. and C. M. before he is deemed fit to practice. The great objection to this arrangement is the length of time which young men are detained in unremunerative labour. We have already noticed the fact that the medical profession is unpopular with our educated youth; that the position and prospects of medical graduates are by no means assured; and yet while these facts are beyond dispute, we find the authorities of our local University insisting upon a higher standard of preliminary education than the London University—the model on which our Indian Universities were formed—demands, and upon the devotion of five years to professional study, subsequent to passing the preliminary examination in general knowledge. Now, the

London University, the regulations of which are more stringent than any other medical examining body in Great Britain, is quite content that its medical graduates shall come up to the matriculation standard as regards general knowledge, and with a period of *four* years devoted to the acquirement of professional subjects subsequent to matriculation. The London University does not examine a twentieth part of the medical men who practice at home. Its standard of requirements of candidates for degrees is confessedly too high to suit the bulk of the young men who, year after year, flock into the profession. But what is to be said of the administration of our local University, which puts burdens on the backs of its medical graduates which even the far advanced London University hesitates at imposing? If the avowed object of the Madras University were to discourage medical education, we do not see how it could have hit upon a more ingeniously devised scheme to effect its purpose. The truth is the medical faculty of the Madras University has been trying to run before it has learnt the use of its legs in walking. In this attempt it has not succeeded. Let the pitiful lists of graduates and undergraduates testify how powerless it has been to influence the education of the medical practitioners of the country. In our opinion, a great mistake was made in the abolition of the examination for the grade of Licentiate in medicine. Were this degree re-established, accepting the matriculation test as the standard of general education, and *four* years of subsequent study of professional subjects, the University might still hope to obtain a hold upon the class of men who qualify for employment as sub-assistant surgeons, but for whom the Government has had, in consequence of the stringency of the University regulations, to institute a distinct standard of examination.

India can afford to do at present without Bachelors

of Medicine and Masters of Surgery. We have nothing to say against the regulations under which these degrees are attainable, but the country is badly in want of educated medical men, whose training has been on a par with that of the average of practitioners at home; and as regards this matter, the University has, by forcing the standard of requirements beyond prudent limits, been a hindrance rather than an assistance.

MEDICAL OFFICERS' FURLOUGH.

We are glad to learn from the home newspapers, that questions are likely to be put in the next Session of Parliament, on the subject of the exceptional application of the Furlough Rules of 1868 to medical officers. We are curious to hear what the replies may be. We confess ourselves unable to imagine any reasonable grounds for the invidious distinction which it has pleased the Supreme Government to make between us and our "combatant" brethren in this matter. We await the result of the "interpellation" (as it is the fashion to term a question in Parliament) with considerable interest and some hope—not amounting to expectation—of justice. So ludicrously little is known at home about Indian matters, that a member has to be sedulously crammed before he can inquire about them with any effect; and beyond the limits of his lesson, he is at sea without chart or pilot. If he make the slightest error in detail, mistakes annas for pies, or teapoys for sepoys —the representative of the India House, only one degree, perhaps, less ignorant than his questioner, points out the lapse with a smile of superior knowledge, evades answering the actual question, and sits down leaving the uncrammed House under the impression that he has triumphantly refuted the objec-

tions of an opponent who had ventured far beyond his depth.

It is humiliating to think that a scientific body of educated men, who do their duty well, and ask, not the favour which they deserve, but the justice which is their right, should have no chance and no hope of obtaining it from the Governments which they immediately serve. Improvements in the position and prospects of the medical officers have come from outsiders like Lord DALHOUSIE and Lord CANNING ; unfavourable Rulings and Resolutions, suppression of some medical appointments and transfer of others to the omnivorous Staff Corps, from Civilian or Civilian-ridden Viceroys. That these things are so no one can deny. Why they should be so we do not attempt to explain. One reason for the disadvantages under which we suffer in India we may suggest. We are scattered in ones and twos over a vast extent of country ; and weak, because we are scattered. In this Presidency, we are peculiarly defenceless. We have no representative Society whereby our strength might be concentrated, our views made known, our grievances stated, and our claims temperately advanced. That an association with these objects, as well as the advancement of medical science in view, could be formed and worked in perfect compatibility with our position as military officers bound by military discipline, we do not entertain any doubt. To this subject we shall probably return in a future number. We turn now to the third and most promising source of redress.

At the last Competitive Examination for admission to the local Medical Service, the number of candidates, we are told, was equal to the number of vacancies. The ratio between these two figures is a valuable, though not a very sensitive indication of the popularity of the service among its members here. Not very sensitive, we say, because some time must elapse before

a wave of discontent generated in India ripples into the theatres and dissecting-rooms at home. The indication, however, though slow of action, is unerring. When gentlemen entering upon a profession badly remunerated at home, turn away in disgust from a well-paid service in India (and ours is, on the whole, a well-paid service), it will penetrate to the minds of India Office authorities, that there must be something wrong out here—something which more than outweighs in medical public opinion, the advantages of fair and certain pay, promotion, and pension, and reasonable opportunities of distinction. However troublesome "Doctors" may be from their amphibious position between military men and civilians, and their inveterate dislike to being bullied or snubbed, they are in the present state of civilization necessary evils. If the present terms offered fail to attract not merely passed men, but men considerably above the average of civilian practitioners at home, the India Office will have to bid higher. Grievances will be redressed. Privileges arbitrarily withdrawn will be restored. It may even prove necessary to place the Department in a more favorable position than need have been conceded if injustice had not created discontent here, and discontent here cut off the supply of suitable candidates at home.

The case of the Furlough grievance is a very simple one. The new Rules were conceded to the Indian Armies as not only a boon to them, but as likely also to result in increased efficiency in the officers, and better service to the State. Medical officers are military officers, fully entitled to share in the boon, and needing more than their combatant brethren more frequent intercourse with Europe, to keep them from settling into grooves, and to render their services as valuable as they can be made. For some time the important differences which have since

been discovered between the two classes of officers remained unperceived; but at length it was ruled that a medical officer's position in charge of a regiment was not "an appointment" in the sense that the quartermaster's or adjutant's or commandant's was—not an appointment which the surgeon could retain and return to if he went on furlough, as other officers could. One "reorganised" native regiment being exceedingly like another, and almost all being liable to locomotion, the injury inflicted on this occasion was not very great, and only important as an evidence of what aggrieved warriors sometimes call "animus." The next blow was much more serious. After consultation with all heads of subordinate governments (whose opinions, however, have not been published), the Government of India ruled that civil medical charges were, no more than military, appointments in any sense which should give the holders the benefit of the Furlough Rules. It was evidently considered a valuable and undeserved concession that a civil surgeon should retain "a lien on an appointment of a similar class." If the Residency Surgeon at Hyderabad takes his furlough, he has a "lien" on Salem if it should be vacant when be returns; and if not—why there is nothing to be done. If the Commissioner of the Neilgherries, or the Superintendent of Coorg, goes Home on furlough, he comes back to Ootacamund or Mercara—not to Bellary or Shemoga.

We intended to point out how this last blow to the advantages of the Medical Department is merely the last of a series of injuries which are gradually reducing it to a position from which it can no longer command a supply of eligible recruits; our space, however, has been already exceeded. In conclusion, we cannot forbear expressing our surprise and regret that our Calcutta contemporary should have attempted to justify the action of the Supreme Government in this matter. His argument that medical charge of

a regiment is a medical officer's ordinary duty, and therefore should not entitle him to share with the commandant or adjutant (to whom military duty is extraordinary, we presume) the benefits of the Furlough Rules is, whatever its value as an argument, inapplicable to civil charges. Union is so important in our case in order to influence the opinion of the profession and professional press at home, that we trust the *Indian Medical Gazette* will reconsider the question.

THE SPECIAL CHOLERA INVESTIGATION.

Some months ago, the Madras Government received a communication from the Secretary of State for India, directing that a special enquiry should be made in places where cholera prevailed epidemically, or endemically, and also in places which were never attacked. At the same time, very full and minute instructions for the record and registration of phenomena connected with epidemic outbreaks were sent out for the guidance of medical officers holding executive charges. The Madras Government, with commendable zeal, lost no time in appointing a gentleman to undertake the difficult and arduous duties connected with the special enquiry. While however the Madras Government proposed, the Financial authorities disposed of so superfluous a work as a special investigation. No provision having been made in the Budget Estimates for work of this nature, no pay could be granted to the officer named for the duty. It was unfortunate, no doubt, for the individual concerned, that in obeying the orders of Government, he should in preparing for a tour of special duty, have been led to incur very heavy expenses in the purchase of horses, travelling kit, scientific instruments, &c., which, under other circumstances, would have been superfluous luxuries. For the present, we

imagine there is little hope of the special investigation being made. On many grounds, we think it is most desirable that the orders of the Home Government should be given effect to. Notwithstanding all that has been written about cholera, we are confessedly quite in the dark as to the circumstances which favor its origin and progress; and until a systematic investigation has been made in regard to every thing likely to favor or discourage the development of epidemics, it cannot be said that we have done all that it is in our power to do. The financial panic of 1869 has been answerable for much evil to India, and this is not the least of the good works of progress which it has temporarily paralysed.

HONORARY ASSIST. SURG. MOODEEN SHERIFF.

A LATE number of the *Fort Saint George Gazette* announces that the rank of Honorary Assistant Surgeon has been conferred on a distinguished graduate of the Madras Medical College. It will be remembered that the duty of compiling a supplementary list of native medicines, and of verifying the vernacular names of drugs, was entrusted by the Indian Pharmacopœia Committee to Mr. Moodeen Sheriff. The time and trouble involved in the task was immense, and the supplementary volume to the Pharmacopœia, which has resulted from the Native Surgeon's labours, is most creditable to his industry and literary ability. The Secretary of State for India has acknowledged the service rendered by the bestowal of the honorary rank as above. Mr. Moodeen Sheriff having been granted six months leave, has accompanied the son of the Prince of Arcot on a tour to Mecca, Medina, and Jerusalem. We hope that Mr. Moodeen Sheriff will, as the result of his travels, be able to furnish us on his return with many details of interest in regard to the Arabian Materia Medica.

THE VACANT "GOOD SERVICE PENSION."

We see it stated on the authority of the local newspapers, that His Excellency the Commander-in-Chief of Madras has submitted the name of Dr. W. Mackenzie, C.B. & C.S.I., the present head of the Indian Medical Department, for the good service pension now vacant. It is well known that medical officers, in common with their military brethren, are eligible to hold good service pensions, but until the present nomination was made, the order, so far as the Medical Department is concerned, has, we believe, remained a dead letter. The selection of Dr. Mackenzie for the vacant pension is a well deserved tribute to that gentleman's services in the field and elsewhere. The medical profession in Southern India must feel that a compliment has been paid it, in the graceful recognition by Lieutenant-General McCleverty of the merits of its most distinguished member. We cordially wish Dr. Mackenzie a lengthened tenure of the substantial boon about to be conferred upon him.

THE NEW MEDICAL CODE.

In reply to numerous enquirers, we are enabled to state that the Code of Medical and Sanitary Regulations, compiled by Mr. Cornish, is nearly ready for issue. The printing of the work, which Government insisted upon having done by its own Press, has been frequently delayed, owing to the inability of the department to overtake the heavy amount of work devolving upon it. The Code will occupy two moderately sized volumes. Only a few forms of the appendix of the 2nd volume, and the indices, remain now to be completed, and it is hoped that the work, when issued, will be a trustworthy guide to young medical officers as to their various duties in the public service of the Indian Empire.

THE MADRAS MEDICAL FUND.

WE are enabled to state that the Secretary of State has decided to accept the assets and liabilities of the Madras Medical Fund from the 1st of April 1870, the beginning of the official year. A despatch, we understand, has reached India, containing a reply to the letter of the Trustees, which stated the terms on which the members were disposed to surrender the management of their noble Fund. The subject will doubtless be soon laid before the subscribers to the Fund.

THE GRADE OF DEPUTY INSPECTOR GENERAL.

DURING the current year all the present Deputy Inspectors General of the Madras Army will be required to vacate their appointments under the operation of the order limiting the tenure of office to five years. The only exception, Dr. J. Kennedy, has accepted a Fund annuity, and retires from the service on the 1st March next.

The services will no doubt watch narrowly the exercise of patronage in filling these vacancies, and especially in regard to the point whether Her Majesty's Royal Warrant of 1860, which lays down the conditions on which selection is to be made, is to be, or not to be, a dead letter.

THE NEW SYDENHAM SOCIETY.

VOLUME XLIII of this Society's publications, being the third of the volumes for 1869, is daily expected. Owing to the severe illness of the lithographer, delivery of the ninth Fasciculus of the Atlas of Skin Diseases has been delayed, but its arrival in Madras may be expected soon. Subscriptions for 1870 are now due.

REVIEWS.

First Book of Indian Botany. By D. Oliver, F. R. S., F. L. S., Professor of Botany in University College London. London: Macmillan and Co., 1869.

We have been favoured with an early copy of Professor Oliver's "First Book of Indian Botany," and hasten to place some account of it before our readers. It forms one of a series of scientific manuals now being issued by Macmillan and Co., and like its precursors, is got up in a very neat and handy form, and is all that could be desired in the matter of paper, type, and illustration. Already some of our English contemporaries have given it a highly favourable welcome, which we think on the whole it well deserves, but we regret to see that the reviewer in the *Athenæum*, (said to be a gentleman belonging to the western presidency), has, in his notice of the work, made a most unadvised statement regarding the teachers of Botany in this country. He says "It might be supposed that the professors of the colleges would illustrate their lectures by the plants around them; but the fact is, that they very often do not." This statement, according to our knowledge, is totally at variance with facts, and we leave it for our readers to imagine how any teacher of botany could instruct his class in morphology, or systematic and practical botany, without making daily use of the indigenous flora.

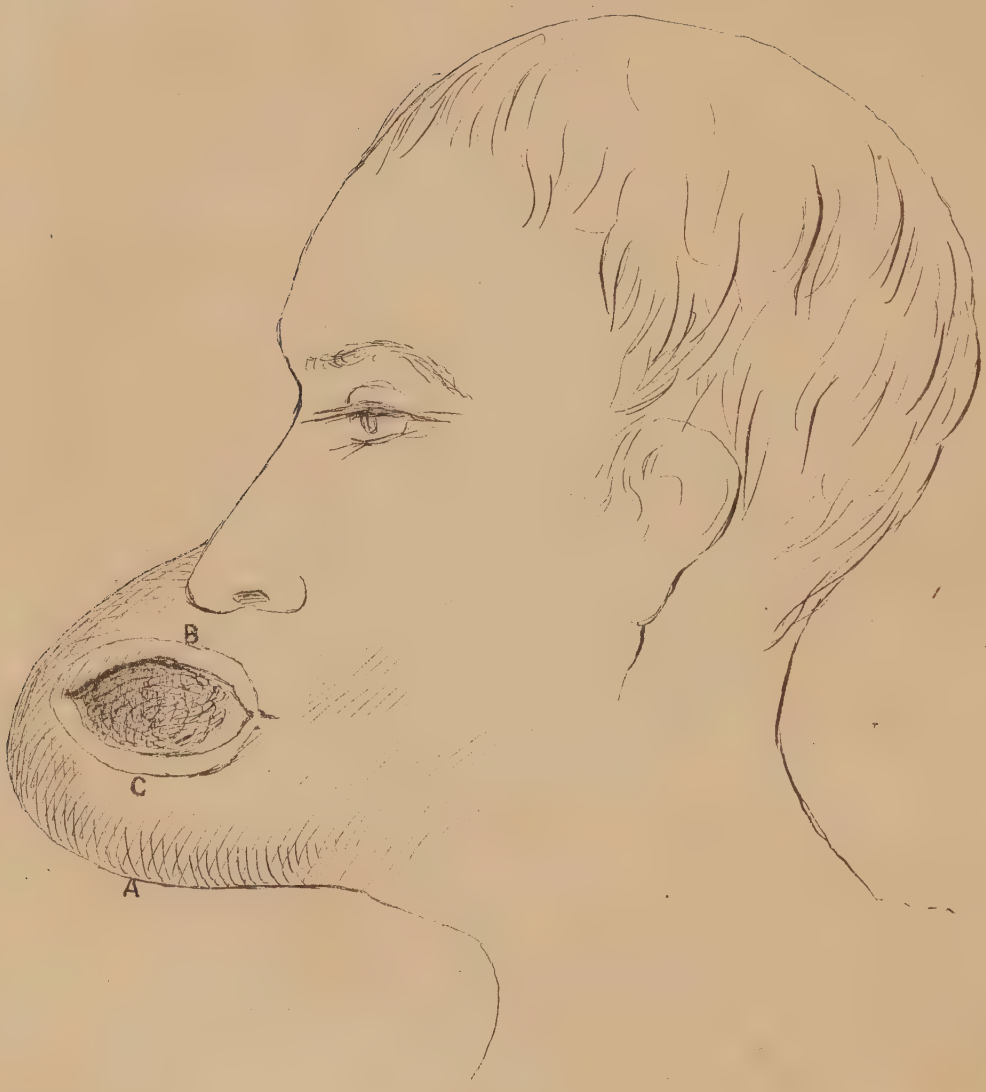
A hand book of this kind has long been a desideratum in India, as the excellent manuals of Balfour and Bentley have all been drawn up with special reference to the requirements of the student in England. The illustrations therefore are, with very few exceptions, taken from the English flora, and fail to afford the same amount of instruction and to excite the degree of interest that they would do if familiar Indian plants were employed. Both these manuals too are much too bulky for the ordinary student of Botany, and are somewhat behind the day, more especially Balfour's, in physiological botany and classification. We do not quite approve either of their arrangement of the subject, which is such as to render the elements of one of the most seductive branches

of natural history as unattractive as possible. No one seeking to teach himself Botany would be likely to begin with the minute structure and chemistry of vegetation, and yet this is precisely what these and most other text-books expect him to do. The colours, but more especially the beautiful forms of plants, are the qualities which first attract attention, and lead us to desire a more intimate acquaintance with them. Accordingly, a knowledge of the external forms of plants, and their organs, should form the student's first step in the science, and from that the ascent to systematic botany—the names, arrangement, and uses of plants—is easy and pleasant. Once so far on the road, there is little fear of his stopping short, and he will find it an agreeable task now and again to halt and learn something of the minute structure and functions of living things altogether so interesting. This is exactly the way in which Professor Oliver seeks, in the work before us, to impart a knowledge of the rudiments of Indian botany, and it is by no means a new system, having been practised by the late Professor Henslow, and many other teachers since his day.

The plan is to begin with some common plant, and learn the names of the various organs of which it is composed. Then a natural step will be to acquire some knowledge of the variations which the same organs present in different plants, and of what use they are in the economy of the individual. In the chapters on these topics, Professor Oliver selects Indian plants to illustrate the various subjects, but is not always happy in his choice. Thus, to illustrate the *Thalamiflorœ*, he selects the opium poppy, a plant which, though largely cultivated in some districts, is rarely seen in most quarters of the country. The Mexican Thistle (Argemone Mexicana), belonging to the same family, would have been just as good a type, and is to be met with everywhere. For the illustration of *Calyciflora*, he selects Melastoma Malabathricum, a plant which in most parts of India is confined to situations from 2000 to 3000 feet above the sea level. Any of the Myrtaceæ, say the cultivated Myrtus communis, or ubiquitous Jamoon (Syzygium jambalanum) would have been more appropriate. Again, Bœhmeria nivea is an unfortunate selection for the illustration of one section of the *Incompletœ*, as it never by any chance flowers on the plains, and being a recent introduction in most parts, is rather uncommon. The castor oil plant would here have proved a much more convenient type. Similar

objections might also be taken to the selection of Dendrobium nobile and Dracæna as types of the subdivisions of monocotyledonous plants, as both are comparatively uncommon. With these exceptions the five introductory chapters of Part I. are very satisfactory, leading the student by easy and natural steps to such a knowledge of the subject as will enable him to examine and compare with the descriptions in works on the Indian flora, any common plants that may come in his way. In Chapter VI. we are introduced to the "Flower-Schedule," a system of teaching for which we are indebted to Professor Henslow, and than which there could be nothing better adapted to encourage the habit of careful observation, and to cultivate the faculties necessary for accurate diagnosis. In Chapter VII. we have more minute particulars regarding the various organs of plants and their modifications, and with these the student will now feel anxious to grapple, as the taste he has had of the science will have made him feel the want of a little more knowledge on various points. In the section on the forms of simple leaves the illustrations are particularly happy: four simple diagrams, exhibiting every possible variation except the panduriform (as in Jatropha panduræfolia), which might conveniently be added to the last of the series. As the system of types is so generally and successfully used by Professor Oliver, it is a pity he did not employ it to illustrate the various kinds of indefinite inflorescence. The inflorescence of, say, the common Cassia fistula might have been taken as an example of a raceme, which again may be regarded as the type of indefinite inflorescence, all the other varieties being modifications of this form. Thus a spike is a raceme with sessile flowers, a panicle a branched raceme, a corymb a raceme of which the lower pedicels are so lengthened as to bring all the flowers to nearly the same level, and so on. Dry facts, when strung together in this way, make a much stronger impression on the memory than when expressed as isolated definitions. Here again we might take exception to some of the examples chosen to illustrate the descriptions of inflorescence and fruits, (for instance, Plantago and Ranunculus); but have probably said enough on this head to lead to a better selection in a second edition of the book, which we hope to see at no distant date. On the whole, this chapter is an excellent one, containing just as much information on a rather dry subject as the average student will

carry away with him. We cannot however use such commendatory terms regarding the next one, on minute structure and vital processes. It seems to us altogether too superficial for the requirements of students preparing for an University examination, and this is much to be regretted, as no one could be better qualified than our author to do full justice to these portions of his subject. We also observe that no notice is taken of the acrogenous form of stem, when a description of the two other kinds is being given, all reference to it being postponed till the classification of cryptogams is being treated of in the concluding chapter on systematic botany. Surely this is neither natural nor scientifically correct? With this chapter ends Part I, on structural and physiological botany. Part II. is devoted to systematic botany, and the opening chapter is rather meagre, giving merely a slight sketch of the theory of classification according to the natural system. Not a word of the time-honoured horn-book of the science, the Linnæan system, and only a passing reference to the classes of the natural system. 'Tis true the latter are partially noticed in previous chapters, but a succinct account of them is absolutely necessary here to give the student a clear and comprehensive view of the subject. It is to be hoped therefore that in a second edition, such additions will be made to this chapter as will make it meet more fully the requirements of the student. The whole of the remaining portion of Part II, which is devoted to the characteristics, distribution, properties, and useful plants of the chief natural orders, is admirable; indeed, all that could be desired. The typical and schedule systems are here again introduced in a very happy manner, the student being constantly led to refer to nature, and taught to observe and think for himself, lessons which are likely to have a beneficial effect on his mental training and future career. Instead of giving a dry detail of the characteristics of the orders, our author selects a plant typical of each family, which the student is expected to have before him, and then by a concise diagram, exhibits all the diagnostic pecularities which he is to notice and remember. Botany, taught or learned in this way, can hardly fail to prove attractive, and the acquirements made will be solid and lasting. It is entirely opposed to the cramming system, which is so much resorted to in all branches of knowledge by the youth of the present day. Having now taken a glance of the "First Book of Indian Botany," we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MEDICAL MISCELLANY.

Osteo-Sarcoma. By JOHN SHORTT, M. D., M. R. C. P. L., F. L. S., &c., Surgeon, Supt. General of Vaccination, Madras Presidency.

CHINNANDY, Æt. 32 ; Caste *Valasen* or fisherman ; profession fishing and net-making ; stands 5 feet 8 inches in height, and weighs 130 lbs.; widower ; never had a family, a stoutish looking well-made man ; small-pox marked, and a native of the village of Pootalpodoor in the Tinnevelly District.

This patient was admitted into the Palamcottah Civil Dispensary as an in-patient on the 30th August 1869, suffering from a large tumour, which involved the whole of the right side of the lower jaw. The tumour extended beneath the skin of the face, upwards to the lower margin of the orbit, and downwards to an inch below the *pomum adami*, thus disfiguring his features, and completely filling up the intermaxillary space on that side. On examination the tumour was found to be pretty well defined, and not only bulged out prominently forwards, but also occupied internally the greater part of the cavity of the mouth, and exhibited to view a large livid fungoid-looking mass, which blocked up the opening of the mouth. The skin of the face was unaffected, and moved freely over the tumour, while the finger, which could be passed freely between the tumour and cheek, required some care and force to be insinuated into the mouth, on account of the blocking up of the cavity by the fungoid growth above alluded to. On the posterior surface of the tumour, inside the cavity of the mouth, the finger could trace a shallow irregular depression, but no portion of the molar teeth could be felt. The four lower incisors were displaced, and formed a line with the left canine tooth, running inwards toward the throat, and formed the boundary of the tumour in that direction. The tumour was hard and inelastic, but somewhat tender to the touch everywhere, in some parts more so than in others.

The following measurements were obtained from both sides of the face.

Right, or tumour side.

1. From lobule of the ear to the symphysis of the lower jaw $9\frac{3}{4}$ inches.
2. From malar bone to pomum adami $9\frac{1}{2}$ inches.
3. From lobule of ear to angle of mouth $7\frac{1}{2}$ inches.

Left, or sound side.

1. From lobule of the ear to the symphysis of the lower jaw $4\frac{1}{2}$ inches.
2. From malar bone to pomum adami 4 inches.
3. From lobule of ear to angle of mouth $3\frac{1}{2}$ inches.

The circumference of the tumour at the base, as well as could be made out, was 16½ inches.

The patient seemed in the enjoyment of good health, but complained of nocturnal pains, and some inconveniences in breathing and swallowing, especially so when he took solid food. His breathing was regular, being 17 in the minute ; pulse 94, soft, and of good tone and volume ; skin cool ; other functions natural.

History.—Said that he was married when a boy, and lost his wife shortly after. About ten years ago, he observed a small lump on the gum of his lower jaw on the right side, which began to increase gradually, and attained its present size. Two years ago, an abscess formed in the tumour within the cavity of his mouth, which burst and continued to discharge some offensive matter for about twenty days, during which time the tumour diminished in size; but when the discharge had ceased, it again increased till it attained its present dimensions. He was not aware if any member of his family suffered from cancer or other malignant disease, nor did he own to his ever having had syphilis. When a boy, he suffered from confluent small-pox, and with this exception, he said that his general health had always been good.

During my stay at Palamcottah, Dr. Thompson, the Zillah Surgeon, consulted me on this case, and we decided that it was a very favourable one for removal, and that an operation was absolutely necessary to save life, and relieve the patient of the morbid mass. Dr. Thompson very kindly allowed me to operate, and with his permission, I have now the pleasure of sending the facts of the case for publication in the *Medical Journal.*

I undertook the operation on the 9th September 1869, assisted by Drs. Thompson and Morton. The patient was first brought under the influence of chloroform, the administration of which was kindly undertaken by Dr. Morton. As soon as the patient was under its influence, I began the operation by an incision along the centre of the lower lip, down to the margin of the inferior maxillary bone opposite to the symphysis, and carried the incision along what I believed was the margin of the bone on the right side, when it was in its natural state, to its angle, and then carried it upwards to the extent of an inch, terminating it at a point anterior to the right meatus anditorius.

The upper flap was now dissected up a little way, and with the aid of a pair of dressing forceps, the tongue, which could only now be reached, was seized, drawn out, and secured with a stout ligature passed through its middle, and the flap then dissected up to the angle of the jaw, securing, during the dissection, the facial artery with a ligature. The diseased mass was now sufficiently exposed, and the lower flap at the symphysis cleared away from the bone, the displaced incisors extracted, and the bone sawn through at this point ; after which I was able to turn out the bone, and see

the extent of the diseased structure, which, as already stated, involved the whole of that side of the bone. I was therefore obliged to remove it from the joint by disarticulating it, which was safely done by keeping the edge of the knife as close to the bone as possible, and thus avoiding injuring the carotid vessels. Its connection with the muscles at the floor of the mouth was rapidly cleared, and the diseased mass removed. A very formidable looking gap was now exposed to view. Before the operation was so far completed, the patient became rather low from the combined effects of the chloroform and loss of blood. He was, however, soon roused from this state by Dr. Morton, assisted by Dr. Thompson, who gave the patient some brandy and water, and stopped all further bleeding by ligatures, &c. The edges of the wound were next brought together with the wire suture, and supported externally with strappings of adhesive plaster, and internally with pledgets of lint soaked in a solution of carbolic acid ; a pad of lint soaked in the same solution was next placed along the surface of the wound, and the parts secured by a turn or two of a bandage, and the patient put to bed. On the whole the patient lost but little blood, and did not suffer any more from the chloroform after he was roused from the depressed state he had fallen into. The depression was, however, so serious at the time, that I cannot but second Dr. Lowe's valuable practical remarks with reference to the use of chloroform as given in Vol. VII. of the *Madras Quarterly Journal of Medical Science*, page 301. In these cases, the surgeon cannot be too watchful to prevent unforeseen consequences.

Vespere, 5 P. M.—Patient comfortable in bed, pulse 98, skin warm, does not complain, took some congee. To have 30 drops of chlorodyne at bed time.

10*th*. 7 A. M.—Patient slept well, and is feeling comfortable ; pulse 96, skin cool, bowels moved. This morning the pledgets of calico were gently drawn out from the hollow of the cheek with a dressing forceps, and the mouth was washed with a weak solution of carbolic acid by a syringe, after which the cavity was again filled in with pledgets of calico soaked in the same solution, and the patient put to bed. Congee diet.

Vespere. 5 P. M.—The ligature used for fixing the tongue was just cut out ; patient comfortable and doing well.

11*th*.—Patient passed a comfortable night ; complained of spasms about the tongue when he attempted to swallow or talk. Functions natural, forbidden to talk ; great quiet to be observed.

15*th*.—Dressings renewed ; since last report, the patient has progressed very satisfactorily, the greater part of the wound having healed by the first intention ; a small superficial slough near angle of the jaw exists, from which some discharge of pus escaped. Some feverish symptoms were present on the 13th, which were readily subdued by compound saline mixture. Sleeps well a

night, bowels regular, takes sago with milk and mutton broth freely, and weak brandy and water for a drink occasionally ; perfect quiet strictly enjoined ; the teeth on the sound side of both the upper and lower jaw are in apposition. It was intended to tie these together with silver wire in the event of any displacement becoming apparent.

25*th*.—The patient is making rapid progress ; wound healed up to the angle of the jaw, where the slough above alluded to has left a small fistulous opening, through which some of the lotion, used to keep the mouth clean, oozes out; the ligature placed on the facial artery came away on the 16th, and the wire sutures have been removed. The patient is lively and in excellent spirits ; partakes of nourishment freely by means of a vessel with a spout ; has had some slight irritation of the bronchial tubes, and with this exception he continues well. Functions natural ; takes quinine and iron internally, and the fistulous opening is gradually closing. Discharge less ; is able to put out his tongue a little ; the side of the face supported with pads and bandages ; great quiet still enjoined, and he is prevented from talking.

13*th October*.—The line of incision firmly united, and the fistulous opening beyond the angle of the jaw, caused by the slough, is closed ; the muscles of the face, which were flabby and loose, are contracting, and the part growing firm ; the man's face now appears symmetrical, and has a natural expression. He talks freely, and articulates almost as clearly as if he had the whole of his jaw, and can masticate solid food with very little inconvenience on the sound side. Has gained flesh and strength, and is looking extremely well. He is very anxious to return to his village and home, as he states that every thing had been arranged for his marriage, which was not consummated on account of the disgusting tumour from which he suffered. Discharged.

Remarks.—Osteo-Sarcoma affecting the lower jaw is apparently not very common in India. I find only two cases recorded in the *Madras Quarterly Journal of Medical Science* : one by Surgeon T. Lowe, which will be found in No. 1 for July 1860, page 174 of the above journal, and the other by the late Dr. Brodrick, in No. 15 for February 1864, page 210 of the same. In both of these cases, portions only of the lower jaw appear to have been removed. This case is interesting from the magnitude of the tumour, which weighed 2 lb. 12 oz. on removal from the subject. On a subsequent examination, it was found to possess the usual characteristics common to this disease. As regards the operation itself, I should not have cut through the lower lip had it not been for the difficulty of getting at the tongue, owing to the tumour having so completely filled up the cavity of the mouth. However, I am glad to find that this portion of the incision has united so very nicely, that the line of union is barely visible ; and should the man

grow his whiskers and beard, no part of the cicatrix will be seen. In my anxiety to remove no more than the portion of the bone actually diseased, and from the cavity of the mouth being so well filled, in sawing through the bone at the symphisis of the lower jaw, I left out a thin shell of bone that formed the boundary of the tumour in this direction. This was subsequently removed, and the left canine tooth was also extracted. In the surgical works I have had the opportunity of consulting, I find no rule laid down as to the time the tongue should be kept secured. The necessity for so doing is certainly laid down, but not the time, and in this case, the tongue was not loosened till thirty-six hours after the operation. Shortly after the tongue was let loose, the patient complained of a spasmodic tendency in that member to rise backwards when he swallowed. I think myself, that instead of a ligature, a silver wire might be passed through the tongue, and be kept secured for at least forty-eight hours. In the case under notice, I was apprehensive lest the ligature should ulcerate through. The adoption of this simple precaution certainly caused no additional pain or inconvenience to the patient ; on the contrary, it added to his security and well-doing. I am very thankful to Drs. Morton and Thompson for their very valuable and efficient aid. Dr. Morton especially rendered very efficient assistance, and to his watchful care I am indebted for the safety of the patient from the ill-effects of the chloroform, which might otherwise have terminated more seriously. To Hospital Assistant Senthevale, No. 453, I am very greatly obliged for much valuable assistance prior to, during and subsequent to the operation ; and nothing can exceed the kindness and attention given the patient by this very intelligent and useful subordinate. Hospital Assistant Ramasawmy, of the Revenue Survey, and another individual attached to the Jail Hospital, were present, and gave such assistance as was required of them at the time of the operation. To W. S. Gantz, Esq., Barrister-at-Law at Tinnevelly, I am indebted for the lucid sketch of the patient prior to the operation, which is attached to this case. The tumour has been sent to the Medical College Museum, Madras.

Tumour of lower end of Ulna ; a good result from the Conservative Operation. By W. FARQUHAR, M. D., Garrison Assistant Surgeon, and in Medical Charge Bowring Hospital, Bangalore.

SHAIK JEMAIL, Mussulman, Æt. 50 years. 8th February 1867. Admitted with a large tumour springing from lower end of right ulna, close to the wrist. There were several ulcerative openings, discharging blood and pus. It extended about four inches up the

ulna; the upper half was moveable on the ulna, but the lower half was incorporated with it, and of bony hardness. Stated that it began eight months ago, without injury, but that it attained its present size chiefly during the last three months.

Operation.—13th February. Chloroform having been administered, and Dr. Johnston and Dr. J. Macpherson kindly assisting, I made two elliptical incisions, excluding some diseased skin, the whole length of the tumour, the second incision extending two inches beyond it up the ulna. The flaps having been dissected back, the lower half of the tumour was found to be a diseased expansion of the ulna. By means of a metacarpal saw and bone forceps, the ulna was cut through, but being found firmly fixed, it was forcibly raised from its position by a levator, and the bone gradually separated from surrounding attachments by the knife kept closely applied to it. Three small arteries were secured, the wound was brought together by straps and sutures, and the forearm placed on a splint with hand-piece. Cold water dressing.

On 29th March.—"Wound has been completely healed some days. Has a good use of the arm and hand. Discharged."

Remarks.—The above case is written as an illustration of a principle sometimes lost sight of, according to Sir W. Fergusson, who, when alluding to removal of tumours from the lower jaw, thus writes: "When a section is made in the healthy part of the bone, it may truly be said that the disease never returns. Yet this feature is totally lost sight of in the bones in other parts, and so if a tibia or fibula be affected with tumour, nothing but total ablation will satisfy. Amputation in the thigh is the step. If the femur is affected, the hip-joint only will suffice for the sweep of the amputating knife; and a like pathology prevails in regard to other long bones."

In the case under notice, age precluded the hope of growth of new bone, but in a younger patient this prospect would lead to an attempt to save the periosteum.

Case of Septic Infection, caused by Guinea-Worm. By Mr. Jolliffe Tufnell, F.R.C.S.I., &c.*

The gentleman the subject of this communication was thirty-eight years of age, a temperate and very healthy man. He had been in India for some years engaged upon the geological survey of the Madras Presidency, and, as such, was necessarily much exposed to jungle, and other influence tending to fever, and he suffered accord-

* We reprint this case not only on account of its intrinsic interest—guinea-worm rarely leading to such formidable consequences—but also because the subject of it was well known to the residents of Madras.—Ed.

ingly from ague on several occasions. He also had guinea-worm a few years back, which attacked him in an unusual situation, namely, above the condyle of the humerus of the left arm. This being treated by a native in the usual manner, and rolled out from day to day, was extracted without suffering or much annoyance.

He arrived in Dublin from India upon the 16th of December, 1868. Upon the 18th his left foot felt tender; so much so, indeed, that he could not put on his boot, and had to go about in a slipper. By so doing he got relief, and then resumed the boot; but the pain returned again, and thus he went on, at one time worse and another better, until the 18th of February, never suspecting the real cause of the mischief.

Upon this day the guinea-worm showed itself in the customary manner as a small boil, from the centre of which the head of the creature protruded. Recognizing it he at once proceeded to extract it, and meeting with no resistance for a considerable while imagined that he could draw it out entire. Unfortunately, his confidence was misplaced; the worm separated in its continuity, and retreated beneath the integument, when about eighteen inches had been gathered into the patient's hand.

The orifice through which this portion had been extracted was situated behind the inner malleolus of the left foot, midway between it and the Achilles tendon. The worm lay in the areolar tissue adjacent, with its tail in all probability coiled up around the tendon itself, because in the progress of the case phlegmonous inflamation showed itself upon the outer side equally with the inner and counter openings, for the escape of pus had to be made there.

A few hours after the breaking of the worm acute inflammation supervened, and extended to the knee. This, however, did not cause any alarm to the patient. When called in upon the 20th I found him sitting in the parlour smoking a cigar, and he seemed to be quite annoyed at being ordered up to bed. Linen cloths soaked in Goulard's lotion were directed to be applied to the limb, which was well raised upon a pillow, and the most perfect quietude enjoined.

All went on well for a time, the local inflammation of the leg subsiding, and the orifice of the worm's exit looking healthy, pressure by a sponge from above downwards being unattended by pain, and discharging daily through the orifice a small quantity of putty-like pus. Upon the morning of the 4th of March, however, that is, sixteen days from the breaking of the worm, all was changed. An intense rigor now suddenly set in, as if the intervening period had been one merely of incubation, and the mischief had by this become developed. Having suffered from intermittent fever this rigor was looked upon by the patient himself as merely an attack of ague, and was expected so to have passed off, but no sweating stage succeeded. Violent fever supervened, with gastric irritation, as if the stomach, in sympathy with the nervous

system, had in its great centre, in the solar plexus, primarily yielded, and for forty-six hours nothing could be retained. Counter-irritation by mustard was resorted to, and only Wenham ice given ; even it for a while was not retained.

It the expiration or this time the fever, restlessness, and irritability of the stomach disappeared, and improvement took place, but only for a few hours. At midnight of the 6th inflammation of the kidneys set in, with intense pain all round the lumbar region, and with suppression of urine. Dry cupping was now resorted to, and Dover's powder and gray powder freely given to act upon the liver and skin, with chlorate of potash as a drink. On the succeeding morning tympanitis had supervened, the whole abdomen being now distended with air. Turpentine fomentations were freely applied, affording some, but slight relief. Broncho-pneumonia of the left lung next followed, succeeded by pleurisy of the same side. These showed themselves upon the 9th, commencing above and travelling downwards until the whole organ and its covering were engaged. These diseases having established themselves there, and taking entire possession, as it were, of one side, passed over to the other, invading and seizing upon the right lungs and pleura. With these profuse perspiration, exhaustion, and weakness, and rapidity of pulse, were the accompaniments. Quinine in doses of three grains with an equal quantity of gray powder, were now given every third hour, and the lateral and posterior portions of the chest fully vesicated by cantharides ointment, and subsequently enveloped in raw cotton, oiled silk being applied over all. Constipation had existed from the commencement. This condition was attempted to be met by turpentine enemata, which not acting castor oil and turpentine in doses of three drachms each were given by the mouth. Under the combined influence the bowels yielded, and much yellow feculent matter of gruelly consistence was discharged. The stomach had now become retentive, and support was freely given in the shape of wine, brandy, essence of beef, eggs, jelly, &c. All sleep was absent, unless procured through the medium of narcotics. Three doses of black drop (prepared by Mr. Evans, of Dawson-street), amounting to sixty-five drops in the whole, equal to 195 drops of laudanum, were required during the night to produce any rest. The pericardium now became engaged, effusion taking place. This, in eight and forty hours, had become absorbed, the dulness disappearing, and friction sounds becoming audible again. The dyspnea and distress of breathing, however, were excessive, the patient sitting propped up in bed, speaking in gasps, with the perspiration standing out upon the forehead in large drops, and exuding again as quickly as wiped off. Sudamina, too, existed over the whole body and upper half of the thighs.

The remaining portion of the guinea-worm now showed itself, having been pressed down in the elimination of the discharge, and

its extremity having been seized with forceps it was drawn out and rolled up by degrees, the whole, to the extent of about eight inches being finally detached, without, however, any relief to the constitutional affection being afforded. Matter having now manifested itself upon the outer side of the tendo Achilles this was cut into, and freely opened. Healthy-looking pus escaped, and a probe passing from one side to the other showed that this collection was in connexion with the original disease.

The urine during this time was dark and loaded with lithates; highly ammoniacal, and very fetid. The cough throughout was hacking and distressing, the efforts to clear the lungs of sputa exhausting the remaining strength in vain efforts to disengage the viscid mucous from the throat. Towards this, the latter period of the illness, the pectoral discharges too were frequently composed of small portions of clotted blood. Throughout the whole period—that is to say, from the occurrence of the rigor, despondency and weakness were extreme, whilst occasional wandering and delirium took the place of sleep. After struggling on for six-and-twenty days, at several times making a rally, and seeming as if about to convalesce, the poor fellow was attacked upon the 29th of March with acute pain in the diaphragm, followed by rapid breathing and bronchitic effusion, and he died upon the morning of the 30th.

No post mortem examination was made, the circumstances under which the patient died, with female relatives only in the house, forbidding the proposition. It is impossible, therefore, to say whether purulent deposits had taken place. None were indicated as existing in the joints, but in the lungs, in all probability, such would have been exposed, had these organs been incised. From the dyspnea and dulness existing before death, I consider that they would also have been found œdematous to a very great degree.

I have named this case as one of septic infection, an animal poison having been introduced into the system, through the breaking of the worm poisoning the whole economy through decomposition of the blood. There was no evidence of phlebitic inflammation to be observed in the course of the vessels of the extremities primarily engaged. The debility that accompanied the disease from its onset, however, was such as would result from the circulation of pus in the system, or a sanious fluid arising from the decomposition of pus.

If then we take the symptoms that usually attend upon cases of pyemia or suppurative fever—viz., great depression and foreboding with moaning, profuse perspiration and sudamina, broncho-pneumonia, pleurisy, pericarditis, flatulence, and abdominal tympany; constipation, sleeplessness, and hallucinations; rapid pulse, and rapid respiration, with bloody sputa; all succeeding with more or less rapidity upon intense rigour, and terminating in death, as characteristic, we have them here, and we cannot but regard this case as one and identically the same disease, and following upon a local cause,

the rupture and decomposition of the worm. There was nothing in the constitution of the patient to predispose him to pyemic infection, or in the locality or surrounding circumstances to render him liable to such disorder. He was a healthy, temperate individual, even tempered and cheerful, and a good companion; the last man likely to generate a materies morbi in himself, whilst the house in which he resided was one of the most cleanly and healthy of any in the suburbs of Dublin. During the progress of the case I had the assistance of Dr. Stokes almost daily in consultation, and I believe I may fairly state that nothing that human means or human foresight could suggest to avert death was left untried by us.

With reference to the subject of guinea-worm, and its treatment by gradual extraction, I wish, in conclusion, to make one or two observations, for dracunculus or guinea-worm is really a formidable disease. Formidable under misadventure, such as in the instance just detailed, and formidable under ordinary circumstances, in its being general over a large portion of the tropics, and when attacking any individual incapacitating him for weeks, and even months, from taking any active exercise, in consequence of the risk which is incurred from rupturing the worm. From the first drawing forth of the head until the final rolling out of the extremity he is in jeopardy, and, in the case of military (and cavalry soldiers in particular), totally unfitted for duty.

Any plan, therefore, that is found upon experience to be capable of hastening the elimination of the parasite, instead of causing risk to the patient, is deserving of attention, and I would, therefore, firstly, refer to the method employed by Sir Ranald Martin, and, secondly, to that by carbolic acid—the one being capable of adoption where the other might not be at hand.

Sir Ranald keeps up a constant stream of cold water, or, if procurable, of ice cold water, poured over the animal at each effort of extraction; and he finds that by numbing the creature it is much more readily drawn out than if left with its power of resistance unimpaired. Still under this treatment the guinea-worm cannot be expected to be withdrawn under a few days.

By whom the carbolic acid treatment was first adopted I know not, but in the month of December, 1867, it was employed by a medical missionary in Bengal, who writes in the *Indian Medical Gazette* for January, 1868,

* * * *

In the case just recorded, five days were passed in the extraction of but a portion of the worm!

A more rapid case, and one that crowns the treatment by carbolic acid, has lately been reported by Dr. Costello, of the Indian service.*

* Through Dr. Costello's kindness I was enabled to exhibit to the Medical Society of the College of Physicians the worm, withdrawn in the brief period of two hours.

The mode adopted by the native dresser, under whose care the patient was, was the passing of a silver probe, dipped in a mixture of one part of carbolic acid to three of oil, upon each side of the worm as far as it would go along the sinus; then to roll up very gently so much of the animal as would come forth freely, renewing the application of the oil directly that traction became apparent; and so proceeding little by little until, at the end of two hours, the worm, measuring thirty inches in length, was drawn out entire. *(Dublin Quarterly Journal, 1st August 1869.)*

Sickness in Hyderabad Contingent and Assigned Territories. By E. BALFOUR, Esq., Deputy Inspector General I. M. D. *(Circular Memorandum, No. 697.)*

SUBJOINED is an Abstract Statement compiled from the Administration Reports of the Medical Officers of the Hyderabad Contingent and Hyderabad Assigned Territories. It shows the total admissions, the average daily sick, and average number of days that each patient remained in hospital.

In the economical management of hospitals, it is a matter of the first importance that a patient be not kept in hospital longer than his case may require. If it be in a Civil or Military Hospital that any detention occurs, the detained patient is occupying the space, already scant, which might be usefully made available for others; the time of the Medical Establishment is occupied by his requirements; and his duties have to be taken by others. If it be an in-patient in a Charitable Dispensary, the detained person has, in addition to the above, to be fed and clothed.

The subjoined Abstract Statement shows that the stay on the hospital books of each patient has ranged from 1·0 day at Balapore, to 37·3 days at Chikuldah.

The period of stay in the Cavalry Hospitals is very even: but the range in other hospitals is so great as to merit attention.

	Range of Days.
Cavalry	11·3 to 15·8
Artillery	3·3 to 11·8
Infantry	6·7 to 19·6
Civil Hospitals ...	5·4 to 14·7
Jail do	8·2 to 29·1
Charitable Dispensaries.	1·0 to 13·5
Forest Department ...	... 37·3

At the Bassim Civil Hospital each patient was, on the average, 14·7 days in attendance. At the Oomrawuttee Jail 29·1 days was the average of the stay. At the Mekhur Charitable Dispensary 7·3 days, but at the Forest Hospital 37·3 days.

Table showing the total sick treated, average daily number of sick, and the average stay in Hospital, during the year 1868-69: —

CORPS OR DEPARTMENT.	Total number of sick treated.	Average daily number of sick.	Average stay in Hospital.
CAVALRY.			
1st	265	11·5	15·8
2nd	218	8·0	13·3
3rd	175	7·0	14·5
4th	425	13·25	11·3
ARTILLERY.			
1st	244	4·2	6·3
2nd	210	1·9	3·3
3rd	175	4·2	8·7
4th	227	7·4	11·8
INFANTRY.			
1st	586	21·5	19·6
2nd	861	27·0	11·4
3rd	173	3·5	7·3
4th	770	21·2	10·0
5th	504	12·2	8·8
6th	814	15·2	6 7
CHARITABLE DISPENSARIES.			
Akolah	460	7·0	5·6
Balapoor	387	1·51	1·0
Akote	398	3·22	2·9
Chandore	...	...	0·0
Dharwah	8	0·75	5·5
Karinjah	164	3·0	1·0
Mehkur	88	7·20	7·3
Mulkapoore	1,133	19 71	6·3
Oomrawuttee	889	30·34	13·5
Woon	192	1·35	1·5
Khamgaon	1,375	25·0	6·6
CIVIL DISPENSARIES.			
Akolah	394	7·7	7·1
Booldanah	918	16·74	6·6
Bassim	115	11·25	14·7
Ellichpore	305	5·27	6·3
Oomrawuttee	803	12·0	5·4
Yeotmahl	563	11·0	7·1
JAIL HOSPITALS.			
Akolah	400	11·89	10·8
Ellichpore	145	3·25	8·2
Oomrawuttee	174	13·9	29·1
Secunderabad	113	3·3	10·6
Yeotmahl	34	1·0	10·7
FOREST DEPARTMENT.			
Chickuldah...	481	49·25	37·3

It may be of use to compare the above with the average stay in other Departmental Hospitals.

In the eight years, 1859 to 1866 inclusive, the average stay in Hospital, as an in-door patient, of each British soldier in the Bengal Presidency, was 14·2 days. In the Bombay Army for the two years 1865 and 1866, it was 14·4 days.

	Days.
In-patients	23·0
Out-patients	3·3
Average of in and out ..	4·5

In 1867, in the Madras Civil Hospitals, where the bulk of the patients are paupers, the total stay of the two classes of in and out-patients was as per margin, viz. 24 days for each in-door patient, and 3·3 days for each out-door patient. These rates seem reasonable.

	Days.
In-patients	15·0
Out-patients	3·7
Average of all	4·4

In the Charitable Dispensaries of Bengal, for the year 1866, the detention on the hospital roll was as per margin; and I gather from these rates, that many patients were admitted *into* hospital for unimportant diseases.

	Days.
In-patients	14·2
Out-patients	2·0
Average of in and out..	2·1

In the Dispensaries of the North West Provinces for the four years, 1864 to 1867, the patients were on the hospital rolls for the marginal periods. Many of these in-door patients can have had very unimportant diseases.

The rule for admitting in-patients into the Charitable Dispensaries should be to receive as in-patients only cases in which life or limb are at risk.

In 1867, the cost of each patient in the Charitable Dispensaries of the North-West Provinces, was four Annas, or six pence: and in the Central Provinces it was $7\frac{1}{2}$ annas, or $11\frac{1}{2}$ pence. The Rajpootanah Charitable Dispensaries in 1868 were conducted at a cost of three annas and ten pie, or about six pence per patient.

In the Hyderabad Assigned Districts the rates are greatly higher than the above; the utmost care is therefore needed to ensure economy, and the expenditure needs closest care.

	Days.
In-patients	25·0
Out-patients	3·1
Average....	4·4

In the Madras Civil Hospitals and Dispensaries, in the year 1868-69, the stay on the rolls was as per margin.

Throughout the Madras Presidency, the cost per patient is much greater than in the Hospitals of

the North-West Provinces, Bengal, or the Punjab. One cause of this is owing to the fact that each of the Madras Civil Hospitals has a Commissioned Medical Officer and Subordinates attached to it, whose salaries increase the cost per patient. The larger the number of patients seeking relief, that is to say, the greater the number over which the cost is spread, the less will be the cost rate per patient ; but the above figures show that in the Charitable Dispensaries of the Hyderabad Assigned Territories, and in the Madras Civil Hospitals, in-patients remain in hospital double the time that those in the Hospitals of Northern India remain, and the cost rate per patient is thereby greatly increased.

In 1867 the cost per patient was Rupees 1-9-1, and in the Civil Dispensary, Secunderabad, the cost per patient in the past four years has ranged as per margin. This institution has been carefully watched over, no tramp or insignificant case allowed to remain, often seven or eight fractures at one time in it, and it has done much good ; but the cost of curing fracture cases, which remain in it for six weeks and two months before being discharged, is great.

Years.	Rs.	Annas.	Pies.
1865	0	12	1
1866	1	2	7
1867	0	15	1
1868	0	14	5

From the severer character of the diseases admitted into the Civil Dispensary Secunderabad, the stay of the in-patients has been, so far as the returns show, much longer than in any other Hospital in India,—double that of the Northern Hospitals—nevertheless, the cost per patient has not amounted to one Rupee per patient. To do all the good possible, at the smallest cost, constant attention to all the above points will be needed.

	Days.
In-patients	29·8
Out do	5·9
Average in and out...	7·2

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Military Officers in Civil Employ—Leave beyond India, S. C.—Accountant General's Certificate.

The 22nd October 1868.

His Excellency the Governor General in Council is pleased to notify that when Military Officers in civil employ shall apply for leave beyond India on medical certificate, the Accountant General of the Province in which they may be serving, and not the relieving Officer, will, on application, furnish the certificate prescribed in the 2nd paragraph of Government General Order No. 755,* dated 17th July 1860, an extract from which is subjoined for facility of reference :—" When an Officer in charge of cash or stores applies for leave on medical certificate, he shall be required to furnish a certificate from the Officer taking charge of his duties, that, as far as can be ascertained after careful examination, nothing irregular nor any known demands against him remain unadjusted in his office."—(G. O. G. G. No. 992 of 1868.)

*Madras G. O. G. 27th July 1860, No. 345.

Sub-Assistant Surgeons—Pension—Leave.

G. O. G. No. 413 of 10th November 1868.—The following Extracts from Notifications in the *Gazette of India*, are republished :—

Financial Department, Simla, the 20th October 1868.

No. 3115.

Read—

A docket from the Government of Bengal, No. 3850, dated 22nd September 1868, reporting with reference to an enquiry whether the transfer of a Sub-Assistant Surgeon to the rank of an Uncovenanted Medical Officer involves the loss of his services in the former appointment as count-

ing towards pension and leave, that it was never intended that the Officer should forfeit the privileges as to pension and leave which, under the rules, he might have already acquired while serving as a Sub-Assistant Surgeon, excepting only that the previous service will not count towards the periodical increments to his salary.

RESOLUTION.—The Governor General in Council approves of the views expressed by the Lieutenant Governor.

Military Officers in Civil Employ—Allowances—Preparatory Leave.

The 22nd October 1868.

No. 3205.

Read—

The undermentioned correspondence regarding the allowances of Military Officers in staff employ during absence on preparatory leave :—

From the Accountant General, Bengal, to the Secretary to the Government of India, Financial Department, No. E 1702, dated 9th September 1868.

I have the honor, by direction of the Accountant General, to observe that the new rules for the grant of leave to Military Officers are silent as to the rate of allowance to be paid to Officers on preparatory leave under Section XVIII ; considering, however, that that description of leave is analogous to general leave taken in India, this Office has in three cases passed to Officers proceeding on the former leave their Military pay and allowances and half staff salary, I am to beg the favor of being informed whether this procedure has the sanction of Government.

No. 2560, dated 18th September 1868.
Endorsed by the Finl. Dept.
Forwarded to the Military Department for opinion.

Office Memo. from Military Department, to Secretary to Government of India, Financial Department, No. 216, dated 12th October 1868.

In returning the enclosure of docket No. 2560, dated 18th September 1868, the undersigned is directed to inform the Financial Department that the allowances of an Officer tak-

ing leave preparatory to furlough have always been regulated on the principle applying to general leave, that is, an Officer is entitled during such leave to the Staff Corps pay of his rank and a moiety of his staff salary.

2. The proceeding of the Examiner of Claims appears therefore to have been correct.

Deputy Inspector General of Hospitals—Relative Rank.

G. O. G. No. 417 of 17th November 1868.—The following Extracts from General Orders by the Government of India are republished :—

Simla, the 30th October 1868.

The following paragraph of a Military letter from the Right Hon'ble the Secretary of State for India, No. 283, dated 26th August 1868, is published for general information :—

Para. 4.—Having forwarded, for the consideration of the Field Marshal Commanding-in-Chief, the papers relating to the claim of Deputy Inspector General of Hospitals * * * to count towards the relative rank of Colonel the period during which he officiated on the full pay of a Deputy Inspector General, His Royal Highness has informed me that in the British service a Deputy Inspector General of substantive rank alone can claim the relative rank of Colonel, and that only from the actual date of the *Gazette* in which his appointment is notified, and that under no circumstances does a merely officiating appointment so qualify. As recommended by His Royal Highness, the same rule should be observed in the Indian service.—(G. O. G. G. No. 1009 of 1868.)

Warrant and Non-Commissioned Officers—Pay, &c. while on Field Service.

Under the authority of the Right Honorable the Secretary of State for India, it is hereby notified that Warrant and Non-Commissioned Officers withdrawn from permanent Staff appointments for field service, shall receive in the Military Department such addition to their pay, &c. whilst so em-

ployed, as will raise their aggregate receipts to the amount they were in receipt of when so withdrawn, special local allowances being excepted.

2. These Officers will have no claim to compensation in virtue of an officiating appointment; and a Warrant or Non-Commissioned Officer holding a permanent appointment, but officiating in a higher one, will be entitled only to the aggregate receipts of his permanent appointment.—(G. O. G. G. No. 1044 of 1868.)

Officers in India—Family Remittance to Tasmania and other British Colonies.

With reference to Government General Order No. 601* of the 6th June 1862, under which Commissioned Officers are permitted to make family remittances to the Cape of Good Hope, it is hereby notified, under the authority of Her Majesty's Government, that the privilege will be extended to officers employed in India, who may desire to make such remittances, under the provisions of that order, to Tasmania and other British Colonies to which Non-Commissioned officers and soldiers are already allowed to make family remittances.—(G. O. G. G. No. 1090 of 1868.)

* Madras G. O. G. 27th June 1862, No. 261.

Advances of Pay to Officers under Furlough Rules of 1868.

The following Military letter from the Right Hon'ble the Secretary of State for India is published for general information :—

INDIA OFFICE;
LONDON, 28TH OCTOBER 1868.

To His Excellency the Right Hon'ble the Governor General of India in Council.

SIR,—I have to inform you that, considering the increased furlough allowances which will be drawn under the Furlough Rules of 1868, it has been determined that the practice now existing of granting advances of pay to Officers on

their return to duty, shall be discontinued in the cases of those Officers who may choose the 1868 Rules, who will consequently, on return to duty, be paid up to the date of embarkation only.

2. I request that you will publish this decision to the Army.—(G.O.G.G. No. 1132 of 1868.)

Officers—Travelling—Appointments.

Doubts having arisen as to the nature of the allowances which should be taken into calculation in determining the title of an Officer to passage at the public expense, when transferred to a more lucrative appointment,* the Right Hon'ble the Governor General in Council is pleased to notify the circumstances under which an appointment shall be held to be of the more lucrative nature referred to not entitling the transferredOfficer to travel at the public expense.

* G. G.O. No. 773 of 22nd September 1864.

2. Passage at the public expense will not be allowed

i.—When the staff salary or consolidated pay of the new appointment shall exceed the staff salary or consolidated pay of the appointment or office from which an Officer may be transferred.

ii.—When the pay and allowances of a regimental Officer may be increased by transfer to any of the mounted branches of the service.

3. The following items, drawn for special purposes, will in no case be taken into calculation in determining the title of an Officer to travel at the public expense :—

(*a.*) Horse allowance, when drawn separately from staff salary.

(*b.*) Office or contingent allowance.

(*c.*) Contract allowance.

4. An Officer who, on the expiration of his tour of service in an appointment, may obtain another appointment the emoluments of which are less than those of the appointment vacated, is not entitled to passage at the public expense.

5. Nor similarly will free passage be granted to an Officer who, holding an acting appointment with superior allowances attached to it, may be nominated to a permanent position the allowances of which are inferior.—(G. O. G. G. No. 1151 of 1868.)

Sub-Medical Department—Special Grants.

G. O. G. No. 454 of 19th December 1868.—The pay and allowances of all Medical Subordinates having been considerably increased under G. O. G. G. No. 550* of 1868, the Government direct that all special grants previously sanctioned shall cease with last payments or issues.

* Madras G. O. G. 19th June 1868, No. 232.

Military Officers—Furlough Allowances.

G. O. G. No. 469 of 1868.—The following extracts from Notifications in *Gazette of India*, are republished:—

READ—

Financial Department, Fort William, 14th December 1868, *No.* 3554.

A letter from the Officiating Deputy Accountant General Bombay, No. 2167 A, dated 12th November 1868, enquiring, with reference to the Financial Resolution of the 14th October 1868 directing that in calculating the furlough allowances of a Military officer on the average salary of the previous three years, all acting allowances should be omitted, whether the order should have prospective effect from the date it was passed.

RESOLUTION.—The Governor General in Council observes that the ruling of the 14th October 1868 was not intended as an alteration, but as an interpretation of a portion of Section 5 of the Rules for the grant of leave of absence to Military Officers, published in the General Order of the Military Department of the 19th June 1868, and it should therefore affect all cases whether they occurred before or after the ruling was issued.

Passages (Indian Ports)—Messing Contribution.

G. O. G. No. 4 of 5th January 1869.—The following extract from General Orders by the Government of India is republished:—

Fort William, the 22nd December 1868.

No. 1225 of 1868.—His Excellency the Governor General in Council is pleased to prescribe the following scale of mess-

ing contribution to be recovered from Officers provided with a free passage on board sea-going vessels from Port to Port in India :—

When Beer and Wines are not provided.

		Per diem.		
General Officers	Rs.	2	8	0
Field Officers	„	2	0	0
Captains	„	1	0	0

When Beer and Wines are provided.

		Per diem.		
General Officers	Rs.	4	8	0
Field Officers	„	4	0	0
Captains	„	3	0	0
Subalterns	„	2	0	0

Acting Allowances—Medical Charge of British Regts.

G. O. G. No. 10 of 12th of January 1869.—The following extract from a communication from the Government of India, dated 23rd December 1868, No. 1054, is published with reference to G. O. G. G.* No. 288 of 1867.

* Madras G. O. G. 29th March 1867, No. 136.

"In the absence of the Surgeon in medical charge of a British Regiment on leave on private affairs in England, the Right Honorable the Governor General in Council sanctions the payment of the medical charge allowance of Rupees 150 per mensem to his locum tenens."

Medical Officers—Furlough—Regimental Medical Charge.

G. O. G. No. 11 of 12th January 1869.—The Government of India have intimated that Regimental medical charges are not considered appointments in the sense of clauses 2, 7, 13 and 16 of G. O. G. G. No. 1064* of 1868, and that Medical Officers, like all others who may accept the Furlough Rules of 1868, and who are holding appointments, will continue to hold them on furlough under the provisions of that order.

* Madras G.O.G. 1st December 1868, No. 434.

Officers—England on Special duty—Pay.

The following paragraphs of a Military letter from the Right Hon'ble the Secretary of State for India, No. 405, dated the 24th November 1868, are published for general information :—

"4. The concluding paragraphs of your Despatch raise a question as to the amount of pay and allowances which should be drawn by Departmental Officers who may be permitted to proceed to England for the purpose of acquiring professional information. You question the advisability of continuing full regimental and staff allowances to such Officers in addition to the other advantages which they enjoy; and you express an opinion that it would be a convenient and liberal arrangement to grant them the full Indian pay and allowances of their rank with half staff salary, the remaining moiety being issued to the Officers officiating for them during their absence.

"5. I concur in this opinion; and the rule you suggest may be notified to the service, and made applicable to all Officers who may in future proceed to this country on special duty. It must, however, be distinctly understood that in no case will permission be accorded to Officers to visit England on duty unless the exigencies of the public service imperatively require it."—(G. O. G. G. No. 6. of 1869.)

Officers—Travelling at the public expense.

The Right Hon'ble the Governor General in Council is pleased to notify that the provisions of Government General Order No. 773,* dated 22nd September 1864, authorizing Officers ordered on duty to travel at the public expense, are not applicable to movements on duty in the immediate vicinity of an Officer's station.

* Madras G. O. G. 11th October 1864, No. 402.

2. All such movements to or between places not more than five miles from the station, must be made by Officers under their own arrangements, and at their own expense, if any is incurred.—(G. O. G. G. No. 13 of 1869.)

(General Orders by the Commander-in-Chief.)

Leave—Pay.

No. 25.

The following letter from the Secretary to Government, Military Department, No. 1314, dated 31st December 1868, is published for general information :—

"In reply to your letter dated 21st instant, I am directed to acquaint you that if an Officer whilst on furlough under the Rules of 1868, is transferred to another appointment, he will still continue to draw the furlough pay as before, whatever the emoluments of the new appointment may be; but the Officer acting in the latter will of course be restricted to half staff salary.

"2. In the event of an Officer's appointment being abolished during his absence on furlough, he would cease to have any claim to half the staff salary, and would revert to the furlough pay of his military rank; and it would rest with the department under which he might have been employed to represent the case for the special orders of Government, if the abolition should have been unexpected, or the circumstances such as to deserve special consideration."

Passage—Transport.

No. 37.

Military Department No. 815, dated 18th December 1868, to the Quarter Master General.

In continuation of G. O. Nos. * * and 154 † of 1868, the Right Honourable the Governor General in Council has been pleased to rule that, in the cases in which free passage is given to Officers who have been removed from the service by sentence of Court Martial, or who may be permitted to resign the service to avoid trial, the system hitherto in force of granting a fixed sum to such officers, to enable them to make their own arrangements shall continue to be followed.

† Vide Madras G. O. G. 5th May 1868, page 86.

Sanitary Report.

G. O. C. C. No. 35 of 31st March 1869.—Under instructions from Government, and in view to the completion of the Annual Sanitary Reports of Cantonments and Stations ordered under G. O. C. C. No. 146 of 12th November 1868, the Commander-in-Chief directs

1. That blank returns be forwarded by the Sanitary Commissioner to Officers Commanding Stations, who will call upon Deputy Inspectors General, or the Senior Medical Officers of the British and Indian Services respectively, to fill in the tabular information required, and the replies to the several questions in separate sheets according to the form.

2. At Bangalore and similar Stations not being strictly Military Cantonments, but under the sanitary supervision of Municipal Commissioners, the Officer Commanding the Station will also solicit replies to the several questions from the President of the Municipal Commission.

3. These several reports will then be thrown into one general report in the prescribed form by the Senior Executive Medical Officer or such other Officer as the Officer Commanding the Station may direct, and be transmitted by the Officer Commanding the Station to the Sanitary Commissioner.

Home Orders.

G. O. C. C. No. 37 of 3rd April 1869.—The following General Orders by His Excellency the Commander-in-Chief in India are republished :—

No. 395.

With reference to G. O. Nos. 88 and 303 of 1867, and 394 of 1868, the clauses of War Office Army Circulars noted in the margin, which have been made applicable to India during the years 1867 and 1868, and which have not yet been published in extenso are re-printed below for general information.

W. O. Cir. Cl. 26 of 1867.
,, 11 of 1868.
,, 24 of 1868.

2. All other clauses introduced have been published (either in Standing Orders, or in the monthly parts of Army Circulars printed at the War Office, and which have been received for circulation to Regiments and Departments, as indicated in G. O. No. 394 of 1868.

3. All Horse Guards' General Orders are received in monthly parts, and circulated for record: but any action required is indicated in anticipation of receipt, as notified in G. O. No. 88 * of 1867; and those Orders only declared applicable to India in direct terms, or to which attention is drawn are to be acted on in this country.

Cl. 26 of 1867.—Advances to Officers proceeding to India.

"Staff and department officers to whom advance pay is issued on proceeding to India will report the date of their arrival in that country to the Secretary of State for War, and will state at the same time in what manner the balance of the advance pay has been adjusted.

"The date of arrival of regimental officers, and the manner in which their advance pay has been adjusted, will be reported by the paymaster of their corps."

Cl. 11 of 1863.—Rations, Officers' Servants.

"The following regulations for the messing and rations of officers' servants are promulgated for general information:—

"1. When the passage money payable by the public for servants, includes messing or rations, and is the same for a male as for a female, officers will be charged 9*d.* a-day for each servant of either sex.

"2. When the rate of passage money includes messing or rations, and is greater for a female than for a male, the difference of passage money will be charged against the officer: 9*d.* a day in addition being charged for rations.

"3. Male servants within the number allowed by regulation, will be charged for at the rate of 9*d.* a-day each for rations. The whole expense of passage and rations of servants in excess of that number will be charged to the officer.

(*Madras G. O. C. C. 1st June 1867, Page 122.)

Passages—Medical Department.

No. 58.

The following letter from the Secretary to the Government of India, Military Department, to the Controller of Military Accounts, No. 621, dated 13th February 1869, is published for general information, in continuation of G. O. No. 35 of 1869:—(Madras G. O. G. 2nd February 1869, page 24).

"I am directed to acknowledge your letter, No. 1495 E dated 31st December 1868, submitting correspondence connected with the claim of Deputy Inspector General of Hospitals* * late of the * * Circle, to a free passage to port of embarkation on being relieved of that appointment on the expiration of his tour of duty, and in reply to refer you to Government General Order No. 83 of the 21st ultimo which, though made specially applicable to Regimental Officers on promotion, is equally applicable to Medical Officers whose Indian tour of duty has expired, and who are not in receipt of Indian allowances. The charge should in such cases be borne by the Indian revenues, as the cost of the passage by sea is."

Medical Department—Subordinates—Pay and Allowances.

Adjutant General's Office, Head Quarters Calcutta, 3rd March 1869.

* * *

No. 59.

G. O. C. C. No. 43 of 15th April 1869.—The following General Order by His Excellency the Commander-in-Chief in India, is republished:—

The following letter from the Secretary to Government of India, Military Department, to the Controller of Military Accounts, No. 246, dated 5th January 1869, is published for general information:—

"With reference to your letter No. 1597 E dated 19th January 1869, regarding the stoppages which may be made from the consolidated salary of a Medical Subordinate while under arrest, I am directed to acquaint you that such forfeiture can only be made under the sentence of a competent court; and the new conditions of pay referred to by you do not seem to the Government of India to alter their position in respect to it, or to confer on them the power of mulcting Warrant Officers in any portion of their pay while simply under arrest.

"2. The ruling would not, I am to observe, apply to the question of staff pay or other extra allowances which the Government have power to withhold at their pleasure. But even in such instances, the staff pay should only be withheld under the direct orders of the Government."

Pensions—Widows—Officers.

G. O. C. C. No. 48 of 23rd April 1869.—The attention of married Officers of the Staff Corps, who have joined, from the British Army, and Medical Officers and Chaplains who entered the service under the new conditions, is called to G. O. C. C. dated 11th March 1867, No. 54, republished in G. O. C. C. 10th September 1867, No. 109, page 201.

Marches—Rum.

G. O. C. C. No. 60 of 14th May 1869.—It having been brought to the notice of the Commander-in-Chief that Officers Commanding Regiments and Detachments on the line of march are in the habit of ordering the issue of extra Rum to the Troops, His Excellency directs that in future no extra spirits may be allowed, unless under very exceptional circumstances, and on the recommendation of a Medical Officer.

A report to be sent on each occasion for the information of the Commander-in-Chief.

Returns—Sanitary.

No. 110.

Officers commanding regiments of British Cavalry and Infantry are directed to preserve such of their monthly Returns, or extracts from them from date of landing in the country, as may be required for the preparation of the Statistical Return called for by G. O. No. 13 of 1868.—(Madras G. O. C. C. 7th February 1868, Page 28.)

2. After the Return in question has been prepared and submitted, the rule laid down in para. 1505 of the Queen's Regulations may be complied with.

3. General Officers in whose Divisions or Districts regiments arriving from England may be stationed, are requested to point out this order to the Commanding Officers on arrival.

Cantonment—Sanitary Reports.

G. O. C. C. No. 74 of 11th June 1869.—In continuation of G. O. C. C. No 14, dated 12th Novemder 1868, Sanitary-Officers of Cantonments and Stations will, under the author rity of Cantonment Committees and Officers Commanding Stations, append to their Annual Report a Statement showing what new works and measures of sanitary importance have been sanctioned, commenced or completed during the year under report.

Cholera—Sanitary.

G. O. C. C. No. 75 of 20th June 1262—Whenever new Military Buildings are being carried on, it is most important that the ground, and water in the neighbourhood should escape pollution, with regard to the health of the future occupants of the New Barracks—General Officers are requested in every case to take special care that proper conservancy arrangements are organized for workmen, coolies, &c., and to enforce the same.

Insanes—Sea Out-fit.

G. O. C. C. No. 85 of 26th June 1869.—Under instructions from Government,* the Commander-in-Chief directs that the following Scale of Out-Fit supplied to Insane Soldiers embarking for England from the Bengal Presidency be adopted in this Presidency :—

ARTICLES.

	Number.		*Number.*
Chest with lock and key.	1	Pillow.....	1
Pea Coat.....	1	Tin pot.....	1
Blue cloth pantaloons....	4	Tin plate.....	1
Broad cloth do ...	1	Iron spoon.....	1
Colored shirts.....	12	Shoes (pair).....	1
Do. worsted socks (pairs.)	12	Cloth cap.....	1
Banians, flannel.....	6	Bar soap (lb),.....	1
Drawers do	6	Jharrons (towels).....	4
Europe or country blankets.....	2	Red worsted cap.....	1
Bed.....	1	Negrohead tobacco.....	2
		Clay pipes.....	6

* Order of Government No. 2502, dated 31st May 1869.

Passage—Travelling Expenses.

G. O. C. C. No. 87 of 7th July 1869.—* With the sanction of Government, the following General Order by his Excellency the Commander-in-Chief in India is republished :—

Adjutant General's Office, Head Quarters Simla,
20th May 1869.

No. 137.

The following Notification by the Government of India, in the Financial Department, is republished :—

No. 139, dated 21st April 1866.—Read the undermentioned correspondence on the question whether a public Officer, travelling on duty, should adopt the route which is cheapest or that which is most expeditious :—

* * * *

RESOLUTION.—The Governor General in Council is pleased to decide that Officers travelling on public duty, should as a rule, take the most expeditious route, but observes that the Account Department should be careful only that Officers shall invariably charge for the route which they actually take, and for no other.

Ordered that the foregoing Resolution be published in the *Gazette of India* for general information.

* Order of Government No. 2488 of 1869.

Leave—Staff.

No. 163.

The following letter from the Secretary to the Government of India in the Military Department, to the Secretary to Government Fort St. George, No. 1078, dated 23rd March 1869, is published for information and guidance :—

With reference to your letter No. 825 of the 2nd instant, I am desired to acquaint you for the information of the Government of Fort St. George, that an Officer who obtains, and proceeds on furlough to Europe during leave of absence in India, cannot retain his appointment for the full period of furlough for which such retention is allowed, excepting under Government General Order No. 545 of 1867,* when he is on sick leave out of his own Presidency.

2. It has always been understood that no Officer in or out of India can be absent from his appointment for a longer period in the whole than two years or 20 months (according to the rules he may be under) without vacating his appointment.

*Madras G. O. G. No. 237 of 1867, Page 118.

TO CORRESPONDENTS.

Dr. A. PORTER. *Received with thanks.* Mr. MILES, *Received.*

CORRESPONDENCE.

DOCTHERS.

TO THE EDITORS OF THE MADRAS MEDICAL JOURNAL.

GENTLEMEN,—In England, as well as in America, the want is keenly felt of a name by which to designate those of the softer sex who may qualify for the practice of the profession.

According to the *Lancet*, our American friends consider "medical women" the correct appellation, *Punch* suggested "Doctrix," and Mr. Kingsley "Doctress." Is it not strange what a mania there is for coining new names when appropriate ones already exist?

It speaks volumes for the modesty of our brethren of the Emerald Isle, that they do not push their claim to having long employed a title which is so much more applicable to a female, as to almost imply a foresight of the present era of Lady Physicians. The term Doct-her is what I allude to, and such expressions as "Docther dear," or "Docther darlint," will soon have a sweet significance which they do not now possess.

Yours faithfully,
CIVIS.

BOOKS, &c., RECEIVED.

Journal des Connaissances Médicales *(to 30th December, 1869.)*

The Secretary Madras Branch of ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND *acknowledges with many thanks receipt of the following Subscriptions for* 1869-70. Dr. Fitzgerald, Rs. 20; Dr. Ridings, Rs. 40 *(two years)*; Dr. W. J. Busteed, Rs. 20; Dr. King, Rs. 20.

THE MADRAS

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OF

MEDICAL SCIENCE.

No. III.—MARCH, 1870.

ORIGINAL ESSAYS.

ART. IX.—*On Scorbutic maladies, as exemplified in the medical history of the Royals in India, sixty years ago.* By W. R. CORNISH, F. R. C. S., Secretary and Statistical Officer, Madras Medical Department.

THE loss of health and life which as a rule in olden times characterised the earlier years of residence of European troops in India, is well exemplified in the history of the 2nd Battalion of the Royal Regiment during its first year of duty in the Madras Presidency, more than sixty years ago. The circumstances connected with the unhealthiness of the regiment during its first year of residence formed the subject of an official investigation, and the facts embodied in the accompanying narrative are recorded in the volumes of Proceedings of the Medical Board for the year 1808. It has occurred to me that the old, and now forgotten, story may be retold with advantage, and with the permission of the Inspector General Indian Medical Department, I have extracted from the old records whatever might be wanting for its completeness.

The 2nd Battalion of the Royals left England in the year 1807, and after an unusually tedious sea voyage, of more than six months, arrived at Prince of Wales' Island, (Penang) where the corps was landed in the midst of the rainy season. The regiment is said to have been composed mainly of "very young men," in fact, for the most part of boys, whose frames were undeveloped. The long voyage and absence of fresh vegetable and animal food, had been followed, as a prolonged course of a defective dietary invariable is, by a scorbutic taint, the men being "predisposed to *ulcers* and *dysenteries* of the very worst type, the latter often connected with obstructions in the liver and mesenteric glands." Landing at Prince of Wales' Island with the object of refitting the transports and securing fresh provisions, &c., the record goes on to tell how the troops "were exceedingly ill-accommodated and ill-fed" at Penang, the men having only the "salt junk" of the transports, while the sick were deprived of many of those comforts which were absolutely necessary to their proper treatment and recovery.

After refitting and provisioning, the transports sailed from Prince of Wales' Island for Madras, arriving there in the last week of 1807. The regiment was ordered to be stationed at Wallajabad, now an abandoned cantonment, but then a military station of importance, about forty miles south-west of Madras. Wallajabad long since obtained an unenviable notoriety for the mortality of European troops stationed there. Its climate is almost identical with that of Madras, though, being removed about thirty miles from the sea, it is a few degrees hotter, and the air is somewhat drier than that on the sea board. The sequel of this story, however, will show that climate had nothing whatever to do with the mortality of the regiment's station there. The condition of the Royals on landing must have been very unsatisfactory, for upwards of one hundred men affected with ulcers and dysentery, had to be left behind at the General Hospital, Madras. Of these sick men 33 died. For two months after arrival of the corps, no official reports seem to have been made of the condition of the regiment, which from the sick list, it will be seen continued very unsatisfactory. On the 28th February 1808, Lieut.-Col. C. Corner, Commandant Wallajabad, brought to the notice of Lieut.-Genl. Macdowall, Commander-in-Chief of the Coast Army, the "alarming

mortality amongst the men of the 2nd Battalion Royals," and concludes his letter in the following terms :—

"From the condition of health in which the regiment landed at Madras, casualties were to be apprehended, but from the advantages expected to be derived from a fixed situation, where everything connected with provisions and comfort seemed to accord with the wishes and expectation of the Commanding Officer and Surgeon, I was led to hope a favorable change would soon be brought about. The acknowledged professional skill of the Surgeon, his humane and unremitting attention, together with the Assistant Surgeons, who have taken up their abode in the hospital for the purpose of more ready assistance, every favorable prospect has been anxiously looked for. In opposition to all those circumstances, I have with concern to report that casualties have increased, and men are dropping off daily. Should the knowledge of this gloomy circumstance suggest to your Excellency the advantage which may be derived from the aid and assistance of other professional experience, it will in all probability relieve a considerable degree of anxiety on the mind of the Surgeon of the regiment, and serve in some degree to disperse a gloom which I fear has taken root in the minds of the men now in hospital."

On the 6th March, the Commander-in-Chief notes, in addressing the Medical Board urging that an enquiry might be undertaken as to the causes of sickness and mortality in the Royals, that the sick at that date exceeded a fourth of the strength of the regiment. The Medical Board having supplied such additional medical aid as was needed, directed the Superintending Surgeon of the Centre Division to proceed forthwith to Wallajabad, and enquire into the nature of the sickness there prevailing. On the 8th March, the Commander-in-Chief again addressed the Medical Board, suggesting for the consideration of the Board whether a move of the corps into tents would not be expedient. As we have heard a good deal of late years on the subject of the advantages or disadvantages of encamping for cholera, I think the following extracts, showing what were the ideas and usages sixty years ago, may not be uninteresting.

The Commander-in-Chief, by his Secretary, writes to the Board as follows :—

"His Excellency directs me to state that having witnessed the advantage of a move into tents in the instance of Her Majesty's 12th Regiment at Seringapatam, he thinks it possible such a measure might be attended with equal benefit on the present occasion, and should the Medical Board concur in this idea, His Excellency would

give immediate orders to encamp the 2nd Battalion Royal Regiment in the vicinity of the cantonment, to which they might immediately return if the experiment was not successful in diminishing the malignity of the disease, or the number of the patients."

The Board, in reply, remark that the circumstances of the two regiments were not the same. The 12th Regiment had been prostrated by febrile disorders, the Royals by fluxes, scorbutic ulcers and bowel complaints. They agreed in the suggestion that the healthy men might be moved into tents, by which arrangement more accommodation would be given to the sick, but deprecated exposure of the sick in tents. They advocated restriction to barracks, or keeping the men under cover, during the heat of the day, supervision of the food and drink, as "men will get Pariah arrack and toddy if they are manufactured and sold even in a vicinity of some miles, and they procure from the bazaars trash which they eat, and which acts with violence on the irritable bowels of new comers." The Board add that the particular form of sickness of the Royals is due to long confinement of the troops on ship board, where they had nothing but salt meat and biscuits for food, and to being ill-fed and badly treated at Penang. The men should be relieved of all duty, and the early symptoms of disease watched for. The use of flannel clothing as a preventative measure was recommended.

Dr. Harris, the Superintending Surgeon of the Centre Division, on reaching Wallajabad, found the Royal Regiment in a most pitiable condition. The men were dying daily of the worst type of hæmorrhagic dysentery. The hospitals were full to overflowing, and a terrible gloom and despondency had seized upon the men of the regiment, who as yet had not succumbed to the effects of the prolonged diet of salt beef and biscuit. Dr. Harris appears to have set about his task of bringing the hospitals into order with energy and judgment. He at once proceeded to relieve the overcrowded hospital by applying for, and obtaining possession of, the barracks of a native corps, the native troops being temporarily hutted elsewhere. A third apartment was assigned for the reception of slight cases, so that they might not suffer from exposure to the foul hospital atmosphere, which is always engendered where sloughing ulcers and bad dysenteries abound. Great attention was paid to the purification of the buildings, hospital

furniture, bedding and clothing. The tapes of the cots of the dysenteric patients were scalded in boiling water, and exposed to the sun and air, before being used for fresh cases. Clean clothing was frequently issued. The wards were constantly fumigated, and the floors cleaned with quicklime. These measures, it is said, soon relieved "the intolerable fœtor" which had up to that time marked the hospital atmosphere. As regards treatment, Dr. Harris seems to have encouraged the liberal use of nourishment. These were the days when regimental surgeons provided all the Commissariat supplies required for the sick on contract, and it is noted that expenditure of brandy, wine, eggs, sugar, &c., far exceeded what the regimental surgeon could possibly afford out of his contract allowance.

The use of large doses of ipecacuanha and opium, which in the year 1807 had become very popular in the Madras Presidency for the treatment of dysenteries, was resorted to on Dr. Harris' advice, and apparently with excellent results. On the 21st March, Dr. Harris was able to report, after acknowledging the earnest co-operation of the military and medical officers of the corps in the amelioration of the condition of the regiment, as follows:

"The health of Her Majesty's Royals is already much improved—they continue to mend rapidly—their spirits no longer droop—they look up, and in so far as I dare pretend to infer from the past, and the present picture of things, our prospects open fast and most comfortably.

"The features of flux and ulcers are actually no longer the same. All subject of alarm for the general security of this young corps will, therefore, I hope be considered as effectually removed. Some casualties will and must no doubt be expected to occur."

On the 4th April, the Medical Board reported that the health condition of the corps appeared to be slowly improving. They recommended the transfer of the convalescents and sick able to be moved, to the sea coast at Sadras. The evil effects of a long course of bad feeding, however, were not so soon to be eradicated. The scurvy taint had taken too deep a hold of the whole regiment to be lightly shaken off. The improvement in the condition of the sick, as described by Dr. Harris, was the certain result of the hygienic and therapeutical measures adopted under his direction, but the frames of the men had been too much impoverished to allow of a sudden return to robust health. On the 9th May, the

Medical Board felt much concern in reporting to Government that "the sickness in H. M. Royal Regiment continued extensive and alarming, the number of casualties even increasing." The weather had become intensely hot, and the feeble health state of the corps, already debilitated by a prolonged course of defective nutrition, was still to become more distinctly manifested. In addition to diseases of the scorbutic type, the men began now to drop off in considerable numbers from heat apoplexy and ardent fevers. The solar heat was intense, the men drank hard of spirits, and the combined effects of sun and drink on subjects prone to disease was most disastrous. Efforts were made to relieve the men of all duties necessitating exposure, and some attempts appear to have been made to prevent unlimited indulgence in bazaar spirits, though, it is to be feared, in the then state of the law with regard to arrack licenses, with very small results. While, however, the health of the corps at Wallajabad continued so unsatisfactory, it is recorded that the sick and convalescent who had been sent to Sadras improved very rapidly in consequence of the change. The Board taking into account all the circumstances of the corps, recommended that so soon as the violence of the land winds had subsided, it should be moved to the Mysore plateau, where it is added "the climate appears to be more congenial to Europeans on their first arrival in India, than the climate of the Carnatic."

This recommendation, prudent and sensible though it was, met with the fate which in past times usually attended the advice of medical men when it related to the prevention, rather than the cure of disease. It was simply ignored. The Commander-in-Chief determined to move the whole corps at once to Sadras, the place where the convalescents had done so well. On this decision being commended to the Board, they, on the 23rd May, made the following remonstrance.

"The Board cannot help expressing their extreme concern, that this measure should have been adopted at this the hottest season of the year, and to a place where it is impossible that the whole regiment can be accommodated in houses, or with the same defence from the heat which they now enjoy at Wallajabad."

The men, the Board go on to say, are suffering from the extreme heat of the weather, and as they would be worse off for shelter at Sadras than at Wallajabad, the move was deemed most hazardous.

Added to these objections, the sickly condition of the corps prevented the Board for detaching the requisite additional medical aid. Should they add, "the total number in the regimental hospitals now be removed, the Board cannot help expressing their apprehensions that the most fatal consequences may follow."

The remonstrance concludes with the expression of a hope, that if not yet too late, the orders for the removal of the regiment to Sadras might be countermanded.

The great anxiety felt by Dr. Harris and medical officers of the regiment in regard to the projected march of the corps, is vividly depicted in the following extract of his letter to the Board. The language is quaint and verbose, and the letter a curiosity in its way.

Dr. Harris' letter, 17th May 1808.

"If report says true H. M. Royals are to be moved down immediately to Sadras and tented there—a measure, the bare idea of which, at this season of the year, with so decided and general a tendency to phrenitis and delirium among us (often seen with scarcely the presence of any evident exciting cause that might be deemed sufficient to call such morbid determination to the head into action). Where our hospitals are already so full, and where the cover of houses for the *well*, as well as for *the sick and convalescent* is so slender and precarious for above a thousand effective men, as it is at Sadras, I must report, Gentlemen, that the idea of so general a remove, I would fain not be inclined to admit; speaking as becomes me, I hope; according to the humble light of my judgment, conscience, and duty.

"Surely, Gentlemen, if this were your own deliberate opinion, intention and recommendation, your usual goodness and confidence would have ere now communicated with me upon the subject. If such communication however, it should still happen, has been held unnecessary by your Board, I do assure you that I bow in respectful silence to the Mandate of your authority.

"I shall continue to exert my utmost (as usual) to carry your orders into execution with that promptitude which I owe to *you*, with that active interest, which I trust I shall never cease to feel *for my charge*, and with that assiduity which I owe *to my own place and posture*—wherever it may be your pleasure, or that of the Hon'ble Board, that I am to be disposed of.

"Enclosed your Board will find the accustomed weekly return of the sick of H. M. Royals, with a very good and very just practical remark of Mr. Davidson's on the face of his own report to me—transcribed and denoted by inverted commas.

"Your Board will also herewith receive lists of ten feeble and slow convalescents sent down on the 13th instant for change of climate to Sadras, under care of Mr. Assistant Surgeon Peppin, who is just *now* returned from thence after delivering over his charge to Mr. Assistant Surgeon Ballingall.

"When about to put the seal to this letter, I am just advertised officially, Gentlemen, by Lieutenant Colonel Corner, commanding this cantonment, that the orders of Government are actually arrived here for every rapid preparation to be made for the removal of H. M. Royals to Sadras. As it is now too late an hour for me to expect your commands by this day's tappal, I shall keep back my Pacqet to see what the post of to-morrow will produce. I am really anxious in the extreme to have that notice you promised me for these dispositions which your authority has recommended to Government, in order that I may address myself to follow them up with every diligence and endeavour."

The distance from Wallajabad to Sadras is not more than may be accomplished in four easy marches, but bearing in mind the enfeebled condition of the men, the intense heat of the season, and the tendency to insolation already prevalent, the removal of the corps, even this short distance, was a most injudicious measure. The remonstrances of the Medical Board proved of no avail. On the date fixed by the Military authorities, an attempt was made to carry out the order for moving to Sadras. The first day's march proved however so disastrous, the men falling out on all sides from sun-stroke, that the removal had to be abandoned. No definite record remains of the casualties caused by this fatal move, but they appear to have been sufficiently serious to have frightened the Government. The total deaths I find in the month of May was 35. In the Medical Board proceedings of the 20th May the following reference is made to the disastrous effects of the march.

"The Medical Board have the honor to acknowledge the receipt of the Chief Secretary's letter of this date, informing the Board that the Royal Regiment have been obliged to return to Wallajabad in consequence of the increased sickness amongst the men, and which still continues with a heavy pressure, and intimating the desire of the Governor in Council, that the Board will without delay report what to them may appear most effectual for the relief of the regiment."

"The Board lose not a moment in laying their sentiments upon so important a subject before Government.

"The Board giving the most serious and mature consideration to the present state of the Royal Regiment, and the alarming sickness which prevails in it, are decidedly of opinion that it should not be removed from Wallajabad at this season of the year.

"In a former proceeding the Board had the honor to recommend that at whatever time a removal might be advisable, it should be to Mysore, where the climate appears unquestionably to be more favorable to the constitutions of Europeans on their first arrival than any part of the Carnatic. Even should the season hereafter permit of the Royal Regiment being removed, previously to that measure being determined upon, the most serious consideration should be given to the number and nature of the diseases, and to the peculiar constitutional circumstances under which the men may be placed, to prevent the possibility of the present distressing situation of the regiment recurring. The Board would recommend in addition to their being relieved from all duty and confined to barracks from eight in the morning till four in the evening as at present, that tatties should be placed over the doors and windows, on the land side, which ought to be kept constantly watered during the heat of the day, that water should be sprinkled on the floors, and over the barrack yard, that broad *pandals* of leaves should be erected in front and rear of the barracks, for keeping off both the morning and evening sun, and that crowding the men should be particularly avoided. If there should be any danger of this, the Board recommend that the Sepoy barracks should be given up to the Royals, and that the native troops should be hutted.

"If these alterations are ordered for the men being kept cool and comfortable in barracks, all that can be effected at present is done, there being ample medical aid, zealous and anxious to discharge their duty, and with whom the Medical Board are in constant correspondence."

Notwithstanding all that was done to mitigate the great heat of the season, disease continued very prevalent amongst the Royals. On the 26th May the Board reported the number of sick as having "increased to a most alarming degree." Dr. Harris and two medical officers of the corps had become disabled for duty and the sanction of Government was asked to send three other medical officers immediately to Wallajabad. On the 6th of June, rain having fallen tempering the extreme heat, the Board was able to report that a most favorable change had taken place in the health of the regiment. This change was attributed in part to the cooler atmosphere, and in part to the judicious measures which had been adopted for rendering the barracks cool and comfortable. On the 20th June the Medical Board "have the

most lively satisfaction in reporting to Government and to His Excellency the Commander-in-Chief the progressive improvement in the health of His Majesty's Royal Regiment." In consequence of this very favorable change the three medical officers sent to Wallajabad were relieved and permitted to return to their own duties. From this date the Board's proceedings are silent with regard to the special circumstances of the Royal Regiment, but the monthly returns of sickness and mortality for the entire year are available and will now be noticed.

I must premise here that the Medical statistics of the period referred to, were not kept in a shape to afford all the information that could be desired. The Medical Board made up, and forwarded to Government, monthly returns of sickness and mortality amongst all troops, European and Native, but these returns did not show the admissions and mortality separately of each disease. The total number in hospital each month, under each disease, is shown in the monthly return, but the deaths are all lumped together. There seems at this time to have been no system in the classification of diseases. Every man returned the list of his sick, as seemed right in his own eyes. Hence such entries, as "Swelling," "Lameness," "Bile," "Pulmonic complaints," &c., were common, in lieu of more accurate definitions. From the returns of the regiment for the first year of its residence in Madras, I have been able to construct the following abstract table. It is correct so far as it goes, but the mortality amongst the convalescents transferred to the sea coast has not been included, nor is the mortality of the men left sick at Madras on landing shown. The table therefore, understates the actual mortality during the period to which it refers. I give elsewhere the deaths occurring away from regimental head quarters, so far as I have been able to trace them.

TABLE *of Sickness and Mortality in H. M.'s Royal Regiment at Wallajabad,* 1808.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Strength.	1040	1025	1006	991	970	906	990	975	1083	1079	1070	1060
Sick treated.	237	205	231	292	271	205	180	174	146	158	164	155
Died.	15	14	13	21	35	8	3	8	3	2	6	6
Remaining...	121	116	134	106	114	62	76	65	72	84	41	87
Admitted....	237	84	115	158	165	91	118	98	81	86	80	114
Transferred.	...	...	...	72	...	...	...	...	...	...	54	...
Special diseases.												
Dysentery...	123	106	130	161	85	65	84	84	60	49	35	26
Diarrhœa.	16	4	2	2	2	...	...	...	...	...	...	...
Fevers.	11	15	17	26	120	95	62	45	20	27	23	36
Rheumatism.	5	9	10	5	...	6	2	2	...	...	...	...
Ulcers.	40	29	29	45	27	22	19	20	25	34	68	66
Venereal.	19	20	20	23	20	11	5	12	31	32	22	19

The table, in the shape I have been able to prepare it, is not very full of information, but from it a few particulars may be gathered. The mean strength of the corps appears to have averaged 1016 for the year. The admissions, including men left in the General Hospital on landing, were 1607. The deaths at Wallajabad 134, in the General Hospital, Madras 24, elsewhere 9; total 176. Putting these figures into proportions, the results are as follow:—

Admissions to strength per mille...1581·7
Deaths to „ „ ... 173·1

In another place, the Medical Board give a table showing the casualties in the regiment from the 1st January to 31st August, and in this, the total number of deaths are given as 176. If this latter account be correct, then the deaths occurring at Wallajabad in the months of September, October, November and December, seventeen in number, should be added to the 176. As stated before, the deaths occurring away from regimental head-quarters are not very accurately given, and it would seem probable that the loss of the regiment in the first year of its residence was nearly *twenty per cent.* of its strength.

Under any circumstances, however, the mortality, which is actually recorded in the monthly returns 17·31 per cent., is most appalling.

The Medical Board, in reporting to Government, in 1809, on the sickness and mortality of European troops, show in detail some of the diseases which caused this fearful loss of life.

	Admitted.	Died.
Fevers.....	248	17
Flux.....	541	98
Hepatitis.....	20	3
Other Diseases..	365	58—176.

The experience of the Royal Regiment had been anticipated in a great measure by that of the 30th Regiment Foot, which arrived in India just one year before the Royals. The 30th Regiment had encountered a long and tedious sea voyage, had been landed at Penang, and re-embarked for Madras, where the corps arrived sickly and infected with scurvy in its various forms. On arrival, the 30th Regiment was sent to the same station, Wallajabad, and suffered apparently in precisely the same way as did the 1st Royals in the following year. The regiment being

required in Bengal, left the Madras Presidency on 31st August 1807.

In the seven months of its residence, however, the following sickness and mortality occurred :—

Her Majesty's 30th Regiment, from 24th January to 31st August 1807.

STRENGTH ON LANDING—1,229.

	Admitted.	Died.
Fevers.....	131	20
Flux..... ...	491	85
Hepatitis.	22	3
Other Diseases..	283	24—132.

The mortality in this regiment during the seven months of its stay in the Madras Presidency, was at the rate of 18·5 per cent. per annum of strength. Elsewhere,* I have given a description of the hæmorrhagic type of dysentery which affected the 30th Regiment. Reliable eye-witnesses have declared that in many of the cases, the first evidence of there being anything wrong with the patient was a copious discharge of fluid blood *per anum*. A large proportion of these cases were unamenable to any form of treatment. The causes of the disease were to be looked for in the impoverished blood, deprived of its essential elements by a prolonged course of inferior diet. This type of dysentery was common enough amongst the earlier voyagers to the Indian seas, as any body may see who will take the trouble to examine the records of those early voyages.† At the

* Indian Medical Gazette, Vol. September and October 1869.

† In the "first voyage of the English East India Company in 1601 under the command of Captain James Lancaster," the fleet left Woolwich on the 13th February 1601. Owing to contrary winds in the Channel, it did not get finally to sea before 18th April. They did not reach Saldanah Bay (Cape of Good Hope) before the 9th September. In July scurvy appeared in all the crews but one, and by the time the ships arrived at the Cape, the whole of the crews were disabled, so that they could not hoist out their boats, or let go their anchors. In one ship, the disease had made but little way. "The reason of the men in the *Admiral* being in such better health than in the other three ships was this. Lancaster brought with him to sea, several bottles of *lemon juice*, of which he gave to each man, as long as it would last, three spoonfuls every morning, fasting. This juice worketh much the better if the person keeps a spare diet, wholly refraining from salt meat; which salt meat and being long at sea, are the only causes of breeding this disease. By this means, the General cured many of his men, and preserved the rest so that, though his ship had double the number of men of any of the rest, he had not so many sick, nor did he lose so many men, as any of the rest." In December however when this very ship got to Madagascar and was waiting there for provisions there died the Masters Mate, Surgeon, Chaplain, and about ten common men, of "a bloody flux."—Kerr's collection of Voyages and Travels, vol. viii. p. 111, 112.

time I speak of, the diet of troops at sea was altogether wanting in the elements necessary to health. Salt beef, salt pork, and hard biscuit formed the staple food, and when voyages were prolonged, as in the instances I have given, from six to nine months, we, with our truer notions of the physiological requirements of the human body, can understand how unfitted the troops subjected to such a diet must have been to withstand the trials of a strange climate. The Medical Board in 1808 saw with sufficient clearness that the terrible loss of life involved in the transport of troops to India might be avoided. Long voyages and heavy death rates in the first year after landing had been the almost invariable rule. But it was noticed that troops which had been detained at the Cape and then sent on to India, and which had been only six or eight weeks, instead of as many months at sea, did not suffer in the same proportion as the corps I have referred to. The Board, in making suggestions to Government on this head, drew attention to the fact that regiments coming from the Cape to India experienced a mortality of only three to five per cent. of strength per annum, and on this fact they based a recommendation that a depot for troops should be formed at the Cape, where the men should have time to recover from the effects of salted meats, before continuing their progress to India. In those days, I need hardly say, that the art of preserving vegetables and fresh meats was unknown, and the disorders due to defective food-supply were most common.

The invention of an easy method of preserving fresh provisions, and the adoption of the invention for the improvement of the dietary of troops at sea, has for very many years past almost annihilated the severer manifestations of scurvy in troops coming to India. The adoption of the overland route, and shortening of the time at sea, will tend still further to reduce the risks of improper feeding during sea voyages.

In examining the causes of the excessive mortality of European troops in former times, it has seemed to me that sufficient stress has never been laid upon the fact, that, as in the two Regiments I have named, the men landed in an enfeebled condition, and that the seeds of the hydra-headed malady, scurvy, had in very many instances been deeply implanted in their frames. The excessive mortality of the 1st Royals and 30th Regiment, began before the men had set foot on Indian soil. It had nothing whatever to do

with locality, or bad barracks, or defective hygiene. The whole history of the sickness points most clearly to scurvy as the main foundation of the more serious types of disease. The number of "ulcers" and the "intolerable fœtor" of the hospitals, engendered by these ulcers and the sloughing bowels of the dysenteric patients, are most significant aids in our diagnosis, at this distance of time, of the true nature of the malady. It was by constant repetitions of disasters such as these, that the Royal Sanitary Commission was enabled to point to the death rolls of the Indian Army, and exclaim "since the commencement of the present century to the end of 1856, your death-rate has averaged 69 per thousand of strength." In reality, India had nothing whatever to do with the excessive mortality of newly-arrived regiments. The fatal diseases were essentially manifestations of scurvy, a purely dietetic disease, and might, under the same conditions of defective dietary, have been just as fatal in the polar seas, as in the burning plains of the Carnatic. The proof of this is found in the fact that since a more suitable scale of food was introduced for transport ships, the sickness and mortality amongst troops sent round the Cape has been at a minimum.

While the present arrangements for the transport of troops exist, there is little probability of a recurrence of scurvy in the aggravated forms in which it affected the Royal Regiment and 30th Regiment of Foot. Still, the practical point to be borne in mind is that a defective dietary may be in India, as at sea, a cause of ulcerative disease of the lower bowel, and that wherever the animal or vegetable components of the soldiers' ration are deficient in quality or quantity, an aggravated form of dysentery may be looked for.

In India, according to my own observation, the stress of the scorbutic disease generally falls on the large intestine. In cold countries, the spongy gums, œdema of the limbs, and extravasation of blood beneath the skin, are the more common symptoms; but here, often the first manifestation of the disease is a disordered condition of the bowels, depending on destructive ulceration of the mucous surface of the large intestine.

The condition of the blood in scurvy is also, I have no doubt, favorable to the manifestation of the symptoms of insolation during those peculiar atmospheric conditions

which excite the disease. I might adduce instances here in proof of the statement, but reserve them for a future occasion.

In Indian jails, scurvy was, not long ago, quite as common as in the British regiments I have alluded to. Under an improved dietary, one suited to the physiological requirements of the prisoners, scorbutic diarrhœa and dysentery is rapidly decreasing. Until quite recently, the mortality of our Madras jails averaged more than twelve per cent. per annum of strength. With a change of dietary, and other improved hygienic circumstances, the mortality has gone down to less than four per cent.

The rations of native troops on foreign service are still unquestionably very defective in flesh-forming substances. If the men did not supplement them by the purchase of animal food, such as tyre, milk, eggs, fowls, and flesh, the mortality of our Native Regiments in Burmah and China must be much larger than it is. There is still too much sickness and disabling of native troops due to the withholding of proper food. Whenever native troops are fed for a prolonged period on their rations, and have no means of supplementing the defects of their diet, the mortality from bowel complaints is excessive. I may instance the China war of 1841, and the Burmese campagin of 1852, when the soldiers were kept a long time on board ship, and were unable to procure other food than the ordinary rations of rice, dhall, and salt fish, as instances in point.

The same observation may be made in regard to Indian emigrants going to the West Indies. The three or four months' voyage is too long a period for a rice and salt fish diet, and as a consequence, the emigrants especially those from the Bengal Presidency, often die in great numbers after arrival in their new home, from one or the other forms of scurvy.

I close these brief observations with the remark, that attention to the quality and suitableness of food is a most important duty of officers entrusted with the sanitary charge of large bodies of men who have not the opportunity of selecting then own rations; and that if this duty be neglected or slighted, palatial barracks, roomy hospitals, and the best ventilated of transport ships, will not be of any avail in the prevention of mortality from diseases of the scorbutic type.

Art. X.—*Review of the Treatment employed in the Cholera Hospital, Vepery, during the months of July, August and September* 1869. By Assistant Surgeon E. F. Brockman, In Medical charge of Lock Hospitals, and temporarily in Medical charge of Cholera Hospital, Madras.

In reviewing the cases of Cholera Spasmodica treated in the Cholera Hospital, Dobbin's Hall, Vepery, during the months of July, August and September last, the principal object of this paper will be to draw attention to a plan of treatment which furnished the most satisfactory results as compared with one or two of those methods which are, and have been hitherto, in ordinary use.

The number of cases which came under treatment amounted to 65 in all; and although this number is by no means large enough to warrant any definite conclusions as to the success of any method of treatment being drawn therefrom, still, on the other hand, it may afford some data upon which a further trial of the remedies here adopted may be made with hopes of considerable success.

The treatment alluded to was that by carbolic acid, combined with dilute sulphuric acid and gin, together with the external applications generally employed.

As far as I am aware, the treatment by carbolic acid internally administered has not been tried by many, and as recent experiments appear to point to the power exerted for good (*i. e.*, in the destruction of parasitic developments, both animal and vegetable, by this agent, and as our attention has of late been drawn to a theory which maintains the propagation of this dire disease by fungoid developments, it would appear to follow almost as a "sequitur," that the administration of carbolic acid or some similar antiseptic in this parasitic (?) disease is plainly indicated. It was with this argument I was led to adopt the treatment by carbolic acid.

The numbers treated in all were not sufficient to enable me to try the effects of carbolic acid administered *alone*, and some little doubt still exists as to whether the simple administration of this *one* remedy would have proved so efficacious as the combined use of two or more drugs. And

why should we expect that *one* drug should cure cholera, when from our knowledge of disease in general, we are aware that no *one specific* remedy has yet been found for any single disease?

That the administration of the combination of drugs above named clearly produced marked improvements in the course of the disease there can be no doubt, but to ascribe to each drug certain effects I shall not presume. A minute microscopical examination of the excreta before and after the administration of the medicines and at the various stages of the disease, would much conduce to the detection of the definite changes occurring in the constituents of those excreta. That some changes were brought about was to be plainly seen in the dejections of the patients under treatment.

It will be as well to state *firstly*, the method which gave the most favorable results; *secondly*, to record some points in the various cases treated which appear to be of interest; *thirdly*, to state what conclusions I arrived at as to the value of some of the principal medicines used; and *fourthly*, to compare the results of cases treated by the method here advanced, with other forms of treatment. And it may be perhaps as well to premise, that the larger number of patients had been treated prior to admission by "Cholera Pills" *et his generibus*, and were on admission in a collapsed condition.

First, the method which gave the most favorable results.

When admitted the patient was put to bed and was covered with blankets. Hot water in bottles, warm sand in the ordinary fomentation tins (and this I would remark was found to be the most effectual, economical, and least laborious means of applying warmth) were applied to various parts of the body, cataplasmata were applied to the inner sides of the upper extremities and thighs, with frictions with turpentine and hot flannels to the trunk and body generally. At the same time, a dose of the mixture marginally noted was administered, and repeated every half hour for four or six hours. If the first dose was rejected (which was seldom the case), a second was immediately administered with or without the addition of chloroform ♏ x, when it was invariably retained. As a rule, after the

℞ Acid Carbolici ♏ ii.
Acid Sulph. dil. ♏ x.
Sp. Genevæ ʒ ii.
Aquæ. ʒ i.

administration of the medicine, the patient asked for, and was able to take with apparent relish, and retain on the stomach, some nourishment in the form of a broth. As soon as some little reaction was established, dry cupping was assiduously employed for three-quarters of an hour at one time along both sides of the spinal column, and this was repeated three or four times during the day.

At the termination of the four or six hours, if the patient indicated decided improvement, the medicine was administered at longer intervals. No stimulants were employed other than that mentioned as forming a part of the mixture, except in convalescents in whom all urgent and suspicious symptoms had disappeared. It was found to be decidedly injurious to allow the contents of the bowels to accumulate in the intestine, and when the action of the bowels was arrested for more than one and half hours, an enema of warm water, holding in solution common salt and castor oil, was always administered with marked beneficial results. When biliary tinging became evident in the motions, calomel in small doses was administered in the first few cases. This was afterwards found to be unnecessary, as the liver acted naturally when its action was once excited. As soon as convalescence was established, all active measures were omitted, and a quinine and acid mixture was found to be beneficial. Close attendance upon the sick was enforced, and a careful watching for change in the symptoms.

As regards the application of the cupping glasses, I would strongly urge their frequent and lengthened use, not only to the renal region, but also along the greater portion of the spinal column. Small quantities of food (about ℥ii. of some strong broth) was administered every half hour; and water was in no manner withheld, but limited quantities were permitted as a draught. A large quantity overloaded the stomach, the collapsed condition of the patient was seriously increased, and, if the patient had strength sufficient, it was invariably rejected. Head symptoms were very insidious in their approach, and demanded anxious observation. The treatment in this unfortunate complication consisted of counter irritation, blistering, &c., to the nape of the neck. Having so far described the manner in which patients were treated, I shall now

Secondly, record some points in the various cases treated which appear to be of interest. Under this head, I would

note (*a*) that a very large number of the patients admitted were found to be suffering from lumbrici. After a few doses of the mixture, these were expelled in large numbers, and presented in some instances strange varieties of colors. Some were of a dark brown color, some were perfectly blanched, while others again were one half brown and one half white. The blanched appearance was entirely the result of the carbolic acid I consider, as I have subsequently found similar appearances presented when carbolic acid is applied in the extraction of a dracunculus. The worms were found to crawl out of the anus when the bowels were not acting. I therefore attribute anthelmintic properties to carbolic acid.

(*b.*) In my opinion, I am persuaded that a stoppage of the vomiting leads to no harm, but on the other hand is beneficial, in that it permits medicines and food to be administered without fear of ejectment, and at the same time tends to conserve the strength of the patient. Everything that excites or assists the act of vomiting should be avoided. All medicines, and especially the careful regulation of the diet, and the fluid which is given to relieve thirst. I remarked that when the stomach was replete, and there was sufficient power in the patient, the matters were rejected; but in those cases in which strength was at a minimum, death took place, and that in a very sudden manner. If small quantities of food and water are given at not too frequent intervals, the urgent and trying vomiting is generally absent. Patients did not complain so much of thirst as of the feeling of hunger after having taken a few doses of the mixture.

(*c.*) In some of the cases which subsequently proved most severe, the symptoms usually described as being characteristic of cholera were on admission altogether absent. The purging moderate, the vomiting absent, the cold and collapsed state of the body not well marked, and in short, nothing to excite alarm or anxiety. These however, in some instances, ultimately proved fatal by the rapid supervention of head symptoms, the causes of which I take to be the almost entire suppression of the secretion of the kidneys, and the accumulation of urea resulting from the extensive waste of tissues.

(*d.*) Entire stoppage of the action of the bowels, I am fully convinced, is the worst symptom in a case of cholera.

I by no means advocate the administration of medicines which are known to have a laxative effect, such as castor oil, but at the same time, I would as strenuously oppose the blocking up and the retention of the dejections within the intestinal canal. It appears to act unfavorably by favoring (if the fungoid theory of the disease be the correct one,) the further increase and development of the parasitic fungi in the system, thus acting powerfully upon the sympathetic nervous system, the greater portion of which is located, as we know, in the abdominal cavity.

In those cases in which the bowels had ceased acting, and in which the matters were accumulating in the intestine (and this was made evident from the distension of the abdomen, and from the "gurgling" when the iliac regions were compressed), with rapid subsidence of the pulse, and with symptoms of collapse, an enema of warm water causing a free evacuation of the bowels, produced in every case in which it was tried, a rise in the pulse, a less anxious look in the patient, and a rise in the temperature of the body.

(*e.*) Relapses were very liable to occur when patients, considered convalescent, were not closely watched. The watching should extend over some days after all urgent symptoms have subsided. These relapses were in some instances complicated with head symptoms. Head symptoms shewed themselves in those whose kidneys refused to take on a healthy action. As long as the kidneys remained inactive, the administration of alcoholic stimulants increased these serious symptoms.

(*f.*) Recovery was noticed to be, as a rule, very rapid, although patients suffered for some time after from debility; and in one or two cases, which subsequently came under my notice, abscesses and ulcerations occurred in various parts of the body, and especially in the corneæ; a condition indicating a low state of the vitality. These sequelæ were principally noticed to be present in the poorer classes.

(*g.*) In almost all those patients who were treated by the carbolic acid, a crop of small pustules was noticed on the extremities and trunk when the convalescent state had been attained. I at first attributed these to be due to the irritation produced by the turpentine frictions which had been employed, but when, as in some cases, the pustules appeared over the face where turpentine frictions were not employed, the cause at first assigned did not appear to

be the true one. Moreover, in proportion to the amount of the mixture administered, so was the fulness of the crop of pustules.

(*h.*) Lastly, I would draw attention to the extraordinary rise of the temperature of the body immediately after death, as exhibited in the bodies of some patients, even in cases which, from the collapsed and shrunken condition of the fingers and the shrivelled state of the skin, denoted the want of circulation just prior to death. For want of a registering thermometer, I was unable to note the highest degree of post-mortem temperature; but judging from my sensations when applying the hand to the surface of the body (trunk), I should think that 104° or 106° F. was the maximum of heat. This rise in the temperature after death has been noticed by Staff Surgeon George Barnard, Bengal Medical Service, and has been brought forward by him as an argument in support of his method of treatment by tartar emetic, in that it results from an acute inflammation of the intestinal mucous membrane (vide his Pamphlet, p. 17.) I will not venture upon any theoretical suggestion as to the cause of this *post-mortem* phenomenon, but I would ask "Why should not this excessive heat be manifested *ante mortem*, as in acute inflammations of other viscera, viz., of the lungs, &c., if the inflammatory theory be the correct one?"

(To be continued.)

Art. XI.—*A Note on the Therapeutic action of Antimony.*

By George Smith, M. D., Principal of the Medical College, & Physician General Hospital.

A few days ago Dr. Sydney Ringer's Hand-book of Therapeutics was kindly lent me by a friend, and running over the contents, I selected the article at page 180, headed "Preparations of Antimony," as likely to afford a fair test of the practical value of the manual. I confess that I was disappointed with the meagre account there given of a remedy, the value of which is fully appreciated by the practical physician.

As antimony, *in the form of antimonial wine,* is a remedy which I am in the habit of using largely and with consider-

able success, it has struck me that a short Note, embodying my experience of certain of its therapeutic actions, might be acceptable to my professional brethren. As a general rule, I give the wine of antimony to adults in one drachm doses repeated every three or four hours day and night, and when necessary, persist in the administration for several days. Antimony is specially valuable in acute inflammations of such glandular structures as the mamma, testis, lung, liver and kidney. In these and in similar diseases, the antiphlogestic action of the remedy is remarkably exemplified, the result being most satisfactory in those cases where tolerance of the antimony is established, and where the remedy is continued day and night. In acute orchitis, hepatitis, and nephritis, as well as in acute pleuritis, antimony, if given early in the disease, ranks almost a specific, its action being materially assisted when pain exists, by the free employment of the hypodermic injection of morphia.

Antimony is a very valuable remedy in gastro-intestinal affections. In small doses it cleans the tongue and improves the appetite. It acts most beneficially upon the gastric, hepatic and intestinal mucous membrane, increasing the elimination of the bile and of the secretions of the intestinal glands. Its value is well seen in cases of alcoholismus and of intestinal embarrassments, the result of excesses in eating or drinking. In such cases it acts as a laxative, inducing copious dark and offensive stools, securing the free action of the kidney, the free action of the surface, and a healthy condition of the gastro-intestinal system, as evidenced by the state of the skin, tongue, appetite and spirits of the patient.

Antimony is of marked value in the treatment of bronchitis, both acute and chronic, of pneumonia, and asthma. It may be combined with other remedies, and can be administered with almost any class of diet. Generally speaking, the remedy is most useful in acute attacks, but many cases of chronic bronchitis and of chronic asthma are benefited by it. It resembles somewhat ipecacuanha in its therapeutic power, but each remedy has its own defined limits of action. In some cases of asthma ipecacuan, given *as for acute dysentery*, acts in the most rapid and satisfactory manner; in other cases, where there is more spasm, antimony is the preferable remedy; in cases where the contractile power of the finest bronchial tubes is impaired, strychnine is of use, and in cases where the asthmatic fits are sudden and severe, the

hypodermic injection of morphia will rapidly and very frequently arrest the spasm. Antimony in these, as in other diseases, when given cautiously, does not, in my experience, prostrate or enfeeble the system.

Antimony is a valuable remedy in acute nephritis with albumen in the urine. In such cases, the continued administration day and night of the remedy must be adopted and pushed during several days if necessary. In most cases no other remedy is required, beyond the occasional use of the hypodermic injection, when the renal pain is considerable or continuous.

Antimony is most useful in the repression of hæmorrhage from the lung and kidney more especially. In the case of the lung, antimony yields to acetate of lead as regards efficacy, provided febrile action be absent; when fever is present, antimony is preferable to lead. In hæmaturia from conjested kidney, no medicine is so safe and certain as antimony.

Antimony is most successful in the treatment of delirium tremens. Within the last eighteen months I have treated twenty cases of delirium tremens, and very many more of every shade of alcoholismus with antimony, and have not, up to this time, lost a single patient. In the management of delirium tremens, opium and stimulants are avoided as poisons. The patient is placed upon good nutritious and easily digested diet, administered in moderate quantities, and at short intervals; rest and quiet are secured him as far as practicable, and for the rest he has antimonial wine in ℥i doses administered day and night every three or four hours. Very seldom does emesis take place; when vomiting occurs, it is frequently after the second or third dose, the system subsequently tolerating the remedy very well. In cases of delirium tremens, the antimony calms the nervous system, tranquillizes the action of the heart, relieves any embarrassment of the respiration, subdues restlessness and delirium, disposes to sleep, controls vomiting and nausea, removes thirst, acts as a mild laxative and diuretic,—thereby facilitating the elimination of the alcoholic poison,—corrects the secretions, cleans the tongue, restores the appetite, and keeps the skin in an active state. It is more successful and more generally applicable than ipecacuan.

In *sthenic* inflammation of glandular structures, no remedy in my experience can compare in efficacy with antimony; in certain spreading inflammations of cutaneous and mucous

surfaces, it yields the palm to aconite and belladonna. I have seen very few cases in which toleration of the remedy failed to be established. The remedy seems to act best in cases where toleration is fully established. The alterative and tonic action of antimony is, perhaps, not sufficiently recognized, but I know from experience that few remedial means restore appetite so rapidly in appropriate cases as antimony.

Mr. Barnard has written a pamphlet to shew the value of antimony in the treatment of cholera. The power of this remedy to control active inflammations of mucous tissues is well known; but as I have no experience of the action of antimony in cholera, I am not prepared to hazard any opinion on Mr. Barnard's practice. Antimony is eliminated from the system by the skin, bowel and kidney. Under the action of the medicine, there is an increase of the urea, uric acid and pigment in the urine, and according to Dr. Ringer, there is an increase in the elimination of carbonic acid from the system.

Confidence in the action of antimony,—the same remark applies to many other remedies—will be increased in proportion as we adopt the practice of prescribing *single* medicines in the treatment of disease. I am convinced that many of those now sceptical with regard to the power and value of medicines, would find their scepticism converted into firm belief were they carefully to study the various therapeutic actions of *single* remedies.

ART. XII.—*Report on the Outbreak of Epidemic Cholera in Conjeveram, from October 16th to 22nd December* 1869.

By Assistant Apothecary J. CHADWICK.

(Communicated by the Inspector General Indian Medical Department.)

CHOLERA prevailed in the adjacent hamlets in the early part of July, and is still prevalent. Immediately I became cognizant of its existence, I drew up a list in the vernacular of a few simple precautionary measures, and requested the Tahsildar to see them enforced. He informs me that they are being acted on with marked benefit. A supply of cholera pills were likewise given.

2. In the meanwhile, as fears were entertained of the disease extending into Conjeveram, conservancy was better attended to, and precautions suggested, to prevent, if possible, its location. It was of course impracticable to restrain intercommunication with these infected villages; and the Tramway helped to carry the seeds of the disease into the town by allowing (to my knowledge) a cholera-stricken patient to be conveyed in the midst of a full carriage all the way from Arconum—a distance of 19 miles. The woman was taken to the dwelling of a friend at the south-east part of the town, and died that night. Five days afterwards another female and her child residing in this same neighbourhood, succumbed to the disease. No other cases occurred. This was at the latter end of September, and I have little doubt but that several cases were brought into the town by the Tramway and escaped detection.

3. In the early part of October large numbers of the inhabitants travelled to and fro, on foot and by rail, to the shrine at Tripatty, where the epidemic I believe was severe. Shortly after this the superintendent of the Indian Tramway Company informed me that he saw numbers of these devotees returning on foot, and several were lying prostrate in the road, either dead or dying from what he believed to be cholera. Be this as it may, certainly the first case which originated the outbreak on the evening of the 16th October, was a poor shepherdess, who, as far as I could glean, had not been out of Conjeveram, and *apparently* had run no risk of infection; but her hut, a most wretchedly squalid one, and a fit nestling place for cholera, lay at the *western* extremity of the town; and it is reported that one of the cases seen on the road was conveyed to the *pial* of her house, where he died. I must not however omit to mention here that the disease existed extensively along the high road to Madras; this road skirts the town on the south-west at a distance of $1\frac{1}{4}$ to four miles. Almost all the villages in proximity to this highway were more or less infected. The shepherdess, about a fortnight after the abovementioned occurrence, succumbed to an attack of cholera. Now, it is so far apparent that the disease was imported in both instances; but, on the same night on which the shepherdess died, a pensioned Tahsildar and his son also succumbed to an attack of cholera; the Tahsildar lived in a comfortable, clean house, about a mile distant from the shepherdess; both were in affluent circumstances, and neither had been

out of town for months previous, or exposed to the influence of the disease.

4. Though the epidemic sensibly increased from this period (16th October), it never at any time assumed any magnitude. The number of cases per diem was three on the average. It selected for its victims chiefly those in impoverished circumstances; and the *silk* weavers, a class notorious for their intemperance (so much so, that even women and children indulge openly and freely), suffered severely. The locality of Sheikpett, the residence of these silk weavers, came in as usual for an early share of the disease. Cholera pertinaciously clung to this place,* and this class of the population, and it is not astonishing, for it is the most defective in sanitation, and has always enjoyed the notoriety of being a focus from whence cholera spreads over the town.

* Sheikpett.

5. The suggestive data I deduce from the above are, that the disease was first imported and intensified afterwards by the moist state of the weather and atmospheric disturbances, with other existing unhygienic conditions, all favorable adjuvants for its propagation.

6. It will be observed that notwithstanding the nearness of these infected villages, and the constant intercourse by the town people with them, cholera was very slow indeed in extending or localizing itself here. I notice this particularly, as it speaks much for the benefit Conjeveram has gained under sanitary regulation. The marked immunity for months, when surrounding villages were suffering severely; the very slow spread of the disease even after its appearance; the readiness the inhabitants evinced in adopting sanitary precautions on this occasion, contrasted with former outbreaks and within my experience, is very encouraging; the concurrent testimony of intelligent natives is indicative of the general belief in sanitary reforms, dissonant as these are from native idea. Certainly the greater or less immunity ensured from cholera outbreaks since the introduction of sanitation, imperfect as this still is,—is very marked; it has already produced such incalculable good, that the inhabitants are quite alive to the silent social benefits, which are slowly but surely lessening the effects of disastrous epidemics.

* * * *

10. I made every exertion to remedy the condition of the sick poor by affording them additional means and comforts. I succeeded in obtaining from the Municipality a sum of 200 Rupees for the erection of a thatched shed, where the indigent might be removed to. Many were in such a state of destitution as to render some such provision absolutely necessary; and it is among this class that the attacks and death rates were the highest. Their constitutions being deteriorated by poverty, afforded an excellent nidus for the reception of the disease.

11. As may be seen from the accompanying list, notwithstanding all my care, some 32 died without having received treatment. Natives evince a great dread of cholera, and endeavour to hide—from even their nearest kin—that they have either vomited or purged, consequently it was a matter of extreme trouble to elicit information of an attack. When seen and closely questioned, their replies invariably were:—"it is not *that* disease," "it is only a little indigestion, bile, &c." "Why will such a sickness come here?" A most superstitious dread is evinced in naming the disease, which was usually expressed in some such manner as ಕಸಿಪ್ಪು, "cusseppoo," bitterness, ಕೂಚಂಬಿ, "coochum," shyness, &c., I had the greatest trouble to see the disease in its early manifestations.

12. To propitiate grim "*Kali*," the death-goddess, who it is said always thirsts for blood, and who the inhabitants believed had now placed her throne in the town, several hundred sheep were sacrificed, which were afterwards partaken of as a repast. A great din of tom-toms and fire-work celebrations were made; this continued for several nights, though the sacrifice terminated on the first, and well so, for it was chiefly a drinking bout; the quantity of arrack drunk on the first occasion was something enormous. Each dwelling in the cholera-stricken locality had a small mound of sand at the threshold, on which a chatty of water was placed, and a tri-colored trident in this manner ψ was marked on the vessel.* It was believed the goddess would, in passing through the streets, stop at each dwelling, and seeing this mark on the pot, would partake of the

* Though irrelevant, I have particularly noticed these religious observances to evince how difficult a matter it was to combat the *apathy* that existed towards seeking medical aid, in consequence of the fatal belief in the protection that was to be afforded by the goddess.

water it contained, slaking her thirst for blood, and so spare the inmates. Others again had a bunch of *neem* leaves tied over the lintel of their doors in addition. The goddess was daily carried through the streets, in order to evoke her sympathy and stay her passion from feeding itself on her devotees; she was detained for a while in each street, where the disease existed, and her attention called to the number of casualties from cholera, and to the sacrifices offered, and lastly the idol was questioned as to the cause of her ire, that no offence might be again given her. It was believed these celebrations would remove the dread entertained of cholera; the people feeling assured of "*Kali's*" wrath being thus appeased. The goddess must have been very offended indeed, as notwithstanding three repetitions of the sacrifices, and nightly tom-tomings, cholera held its own steady course for weeks afterwards.

13. Cholera dejections were ordered to be buried, the evacuations being first destroyed by disinfectants, gratuitously supplied to those houses where the disease appeared. I had previously obtained the sanction of the Collector (Mr. Thornhill) for the purchase by the Municipality of a quantity of these remedies. Uninfected houses were subjected occasionally to fumigations of sulphur by the residents themselves.

* * * *

16. Two tables accompany this report, one shewing the number of admissions from choleraic diarrhœa, the other from cholera. It was difficult in many cases to make a line of demarcation between choleraic diarrhœa and cholera; though many strongly simulated cholera, these cases were not 'returned' as such. The treatment embraced a variety of remedies, Chloroform, Ammonia, Opium, Æther, Nitric, Chlorodyne, &c. The most effective remedy was chlorodyne. It was impossible to record the number of cases from simple diarrhœa, as hundreds not brought on the returns made use of *home* remedies. Very few indeed voluntarily sought treatment. The Hospital Assistants deserve every credit for tracing out cases of loose bowels; the number of instances they brought to my notice of defective sanitary conditions shewed the value of the system of house to house visitation adopted.

17. The general results of the *home* remedies, mentioned above, were very favorable; and I rather encouraged their use, whenever I learnt that the ingredients made use of

were comparatively harmless. Certainly, the *confidence* placed in these remedies helped not a little to diminish the *fear* of cholera, and this was an important handle, if nothing more. But one of the several means used by the people, and which I can assert as having been very efficacious, is the following :

An ounce of pepper was bruised, and then well broiled in a *new* chatty, till the pepper flamed or smoked ; about six or eight ounces of water was then added and boiled down to four or five ounces ; this was strained, cooled and taken for a dose, after each loose evacuation ; three doses were seldom given, as it usually proved effectual with the second. Where pain was felt in the abdomen, a small quantity of cummin seeds was bruised and boiled with the pepper. I am inclined to think that many a diarrhœal attack would have terminated in cholera but for this simple remedy. I have since personally, and in scores of cases, used it in simple diarrhœa with invariable satisfaction.

18. Before detailing the treatment adopted in the disease itself, I here beg to remark that the *type* appeared to me malignant, maintaining this character throughout the visitation. The incessant vomiting, but comparatively slight purging, the burning heat at stomach, urgent thirst, and the intense prostration that followed after two or three evacuations, were all so rapid, that in several cases scarcely three hours elapsed between seizure and death.

19. Premising that only well marked cases of cholera were 'returned,' explanation is necessary as to the recoveries having been made, in most instances, so early after admission. The following will satisfactorily account for this :— First, the admissions were taken just as they were reported, though the attack in most instances occurred hours previously ; secondly, no reliable information could be obtained as to time of seizure ; thirdly, it was impossible to attend such a large list of out-patients, scattered as they were at their quarters :—we had not the time to attend to them. The mode adopted was to discharge them off the list, as soon as I considered them out of danger, subsequently occasional visits being paid to observe how they progressed. In no instance was there a relapse.

20. The subjoined tabular abstract will suffice to shew at a glance the value of the different modes of treatment

adopted. I have likewise added the numbers that have died without treatment as a contrast.

	Without treatment.	Treated by Native Doctors.	Mixed treatment, *i e.*, receiving Dispensary aid after being given up by Native Doctors.	Cholera Pills with Opium.	Cholera Pills without Opium.	Acetic Acid.	Total.
Admitted.	32	7	4	2	57	67	169
Discharged.	...	...	...	...	31	60	91
Died.	32	7	4	2	26	7	78
Remaining....	...	...	...	...	...	...	...
Per cent. of deaths to admissions.	...	...	...	...	45·6	10·4	46·1

From the above it will be observed that the treatment by acetic acid claims prominent notice, particularly as the most rigid trial was given to the remedy, and of the seven deaths, two died from the effects of premature labor; one from sheer neglect on the part of the relatives, administering but two doses of the 'acid,' and in two others, using native treatment simultaneously, in spite of entreaties on my part. I therefore consider that these casualties should not be attributed to the acetic acid treatment; deducting them, therefore, the percentage of deaths to admissions is very small indeed, being about 3·2. (No other medicines were used conjointly, I mean that no other remedies were administered internally, excepting diluted vinegar and water being given as a drink, to save expenditure of the acetic acid in this respect; and also when I ran short of acetic acid, and pending another supply which I procured, I used the *English* vinegar, but in larger doses than the 'acid.') A few of the cases, however, shewed a tendency to head-symptoms, but these were speedily dissipated by the application of "Acetum Mylabris" freely applied to the head and neck; this was the only untoward symptom observed under the use of the "acid," and was more a phase of the disease, as similar symptoms are not unfrequent in the cases treated with "cholera pills without opium."

21. Though the acetic acid mode of treatment may be deemed empirical, the results are to me astonishing. I cannot explain its *modus operandi*, but suffice to say that both

sexes, and of all ages, from the infant of three years to the adult of fifty, were alike submitted to the same test. The cases were taken indiscriminately, just as they were reported and in *all* stages. I at first felt diffident to give up the time-honored remedy of 'cholera pills,' not having seen or read of sufficient data to recommend confidently this novel plan of treatment, and it was with much anxiety I watched its action in the first few cases; I now regret not having treated all the cases with the acid. I am no advocate for the medicine being deemed a specific for cholera, but I can state that I would vouch for its reputation as being worthy of attention and further trial. The success I have obtained emboldens me to make these statements.

22. The effects of the acid were invariably noticed after the fourth or fifth dose; the skin gradually becoming warm and perspiring: the patient falling into a refreshing sleep. Usually, after twelve hours' treatment, a free secretion of urine took place, and with this I considered the disease overcome. Nothing further remained to be done than a continuance of the 'acid' for a day or two longer, at lengthened intervals. Only in two cases was there *retention* of urine requiring the use of the catheter.

23. In the September number of the *Indian Medical Gazette* for 1866, Doctor Greene, the Medical Officer at Tipperah, advocates the use of acetic acid, and requests its being tested. I adopted his mode of administration, which is as follows:—"Ten drops of acetic acid (adult dose) were given in an ounce of water every half hour, steadily, until reaction set in; the interval was then increased to an hour, and as improvement progressed, to two and three hours respectively, until convalescence was established; cold water acidulated with vinegar being allowed as a drink freely. Nourishment, sago conjee and milk."

24. In conclusion, I respectfully beg to bring to notice the assistance rendered by Hospital Assistants Thomas and Ramasawmy. Thomas was the first deputed, and he worked zealously. Both assistants were ever ready day and night to respond to the calls I made on them, and though but lads, they evinced a thoughtful care in discharging the work I apportioned them.

NOTE.—Mr. Chadwick's success with acetic acid is so remarkable, that we venture to call the special attention of our readers to it, begging also that in the event of the remedy being tried elsewhere, the results may be sent to us for publication.—ED. *M. M. J.*

TABLES *exhibiting the Admissions and Deaths from Cholera according to age and sex, under the two modes of treatment adopted.*

CHOLERA PILLS (WITHOUT OPIUM.)

	Under 2 to 5		6 to 10		11 to 15		16 to 20		21 to 25		26 to 30		31 to 40		41 to 50		Above 50		Total.		Remarks.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Admitted.	...	3	3	6	3	7	1	4	5	6	2	1	2	5	2	3	3	1	21	36	
Died.....	...	1	2	4	1	2	...	1	3	3	...	1	3	3	...	1	1	...	10	16	

ACETIC ACID.

	Under 2 to 5		6 to 10		11 to 15		16 to 20		21 to 25		26 to 30		31 to 40		41 to 50		Above 50		Total.		Remarks.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Admitted.	4	4	12	3	3	6	1	6	2	6	2	3	3	4	2	3	...	3	29	38	
Died.....	1	...	1	...	...	...	...	2	...	1	...	...	...	...	...	1	...	1	2	5	

TABLE *exhibiting the Admissions from Choleraic Diarrhœa classified according to age and sex.*

	Under 2 to 5		6 to 10		11 to 15		16 to 20		21 to 25		26 to 30		31 to 40		41 to 50		Above 50		Total.		Remarks.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Admitted.	1	6	5	11	9	5	10	7	1	2	4	4	12	6	2	1	4	1	48	43	

in Conjeveram.

200

ART. XIII.—*Cholera in the Deccan.* By E. BALFOUR, Esq., Deputy Inspector General, Indian Medical Department.

TABULAR *Statement showing, so far as information is available, (the admissions?) and deaths from Cholera in each Month, in Civil and Military Stations of the Hyderabad State, through a series of years, from* 1857 *to* 1869.

THE object in view in framing the following Statement was to ascertain the periods of the year in which Cholera occurs in the Hyderabad Territories. Of the total 6,316 deaths, 3,726 occurred in the four months, May, June, July and August. In Akolah, Ellichpore, Secunderabad, and Hyderabad, it has been present in every month of the year.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	GRAND TOTAL.
TOTAL.	A.	147	131	118	368	320	129	275	858	130	52	226	357	3111?
	D.	177	56	79	140	604	425	1063	1634	152	25	128	1680	6316*
Aurungabad (1857, 1862, 1865, 1866, 1869.)	A.	17	7	...	...	60	...	...	...	...	...	1	...	85
	D.	4	3	...	...	18	...	...	...	...	...	1	...	26
Akolah. (1854, 1857, 1864, 1865, 1866, 1868, 1869.)	A.	12	9	41	14	4	13	4	10	3	2	1	...	113
	D.	7	2	16	3	...	7	3	2	2	...	...	...	42
Akote. (1868.)	A.	..	...	2	...	...	...	...	19	3	...	...	...	24
	D.	...	...	...	...	...	...	...	2	...	...	...	...	2
Bolarum. (1859, 1865, 1868, 1869.)	A.	3	...	...	...	4	6	1	2	...	...	...	25	41
	D.	...	...	...	...	2	2	...	2	...	...	...	7	13
Ballapore. (1868, 1869.)	A.	...	...	...	1	...	...	...	22	14	34	2	...	73
	D.	..	...	...	1	...	...	...	1	4	6	...	...	12
Chandore. (1869.)	A.	...	...	...	61	13	4	12	1	1	...	...	...	92
	D.	...	...	...	15	5	...	1	...	1	...	...	...	22

* The deaths include the registration reports of towns in which the number of cases were not recorded.

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	GRAND TOTAL.
Chickuldah. (1868, 1869.)	A.	...	...	...	...	...	1	...	...	2	..	...	...	3
	D.	...	..	...	...	...	...	...	...	...	...	...	...	...
Darwah. (1869.)	A.	..	...	...	26	13	1	...	...	...	...	...	...	40
	D.	...	...	...	3	...	...	...	...	..	...	...	...	3
Ellichpore. (1858, 1859, 1860, 1862, 1863, 1864, 1865, 1868, 1869.)	A.	1	...	1	6	3	11	9	13	1	4	...	1	50
	D.	1	...	1	2	2	2	5	6	...	2	...	...	21
Hingolee. (1856, 1857, 1859, 1860, 1861, 1862, 1865, 1868, 1869.)	A.	...	...	2	4	11	5	26	22	...	...	2	1	73
	D.	...	...	2	2	4	4	10	12	...	...	...	1	35
Jaulnah. (1864, 1865, 1868, 1869.)	A.	1	...	...	3	46	27	38	93	65	..	...	...	273
	D.	...	...	...	1	21	10	11	29	21	...	...	...	93
Khamgaon. (1863, 1869.)	A.	...	...	...	...	...	...	15	28	1	...	...	...	44
	D.	...	...	...	...	...	...	8	11	..	...	...	...	19
Kamptee. (1860, 1866, 1869.)	A	...	...	...	5	...	2	3	12	...	..	1	...	23
	D	...	...	...	1	..	1	1	4	...	...	1	...	8
Lingasoogoor. (1854, 1869.)	A.	...	...	...	..	2	1	8	...	...	..	...	...	11
	D.	...	...	...	...	2	1	4	...	...	..	...	...	7
Mehkur. (1869.)	A.	...	1	...	...	1	...	2	14	2	2	...	...	22
	D.	...	..	..	...	..	...	...	3	...	2	...	...	5
Mulkapore. (1868, 1869.)	A.	...	...	...	...	...	7	...	25	...	...	...	...	32
	D.	...	...	...	...	...	1	...	3	...	...	...	...	4
Mominabad. (1864, 1865, 1869.)	A.	...	...	...	...	1	8	1	...	...	...	...	...	10
	D.	...	...	...	...	1	5	1	...	...	...	...	...	7

		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	GRAND TOTAL.
Oomrawuttee. (1864, 1865, 1866, 1868, 1868.)	A.	12	2	...	97	63	2	27	42	3	...	...	...	248
	D.	7	1	...	12	4	1	8	11	1	...	...	...	45
Pallagaum. (1869.)	A.	..	...	...	...	1	...	...	1	3	..	...	...	5
	D.	...	...	...	...	...	...	...	...	...	...	...	...	...
Secunderabad (1861, 1864, 1865, 1866, 1867, 1868, 1869.)	A.	39	5	16	26	83	42	90	550	32	10	160	44	1097
	D.	22	2	36	21	39	17	44	310	62	15	100	50	718
Yeotmahl. (1865, 1866, 1869.)	A.	...	9	50	113	8	...	18	1	...	...	..	...	19
	D.	...	2	22	39	2	...	4	...	...	...	.	...	69
5th Infantry, H. C., on march from Bolarum to Lingasoogoor. (1868.)	A.	...	...	...	..	...	...	...	...	...	...	4	68	72
	D.	...	...	...	..	...	...	...	...	...	...	1	31	32
1st Cavalry, H. C., from Hingolee to Aurungabad. (1868, 1869.)	A.	59	...	...	...	...	...	...	...	...	...	...	1	60
	D.	2	...	...	...	...	...	...	...	...	...	...	1	3
3rd Cavalry, H. C., from Bolarum to Hingolee. (1868.)	A.	...	...	...	...	...	...	...	...	...	...	..	137	137
	D.	...	...	..	...	...	...	...	...	...	...	...	82	82
H. M. 4th M. N. I., from Madras to Secunderabad. (1865.)	A.	...	98	5	1	...	...	1	...	...	...	...	...	105
	D.	...	44	2	...	...	...	...	...	...	...	...	...	46

			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	GRAND TOTAL.
HYDERABAD CITY AND VICINITY.	Bolarum. (1859, 1865, 1868, 1869.)	A.	3	..	..	..	4	6	1	2	...	...	...	25	41
		D.	...	...	..	...	2	2	...	2	...	...	...	7	13
	Chudderghat. (1868, 1869.)	A.	3	...	...	...	...	...	...	...	...	...	55	80	138
		D.	2	...	...	...	...	...	...	...	...	...	26	34	62
	Hyderabad. Inside. (1868, 1869.)	A.	...	...	...	?	..	...	...	..	...	...	...	...	?
		D.	132	2	...	36	373	251	708	943	51	...	60	558	3114
	Hyderabad. Outside. (1868, 1869.)	A.	...	...	...	?	..	...	...	..	...	...	...	...	?
		D.	...	...	...	...	129	123	249	292	10	...	92	916	1811
	Secunderabad (1861, 1864, 1865, 1866, 1867, 1868, 1869.)	A.	39	5	16	26	83	42	90	550	32	10	160	44	1097
		D.	22	2	36	21	39	17	44	310	62	15	100	50	718
AT A DISTANCE FROM HYDERABAD STATE.	Berhampore. (1859, 1860, 1861.)	A.	...	...	...	11	7	...	20	3	...	..	...	..	41
		D.	..	...	...	4	2	...	6	3	...	...	...	...	15
	Thayetmeo. (1865.)	A.	...	...	1	...	...	..	...	...	...	...	...	...	1
		D.	...	...	...	...	...	...	...	...	...	..	...	...	...

ART. XIV.—*Experiments with Snake Poison.* By J. SHORTT, M. D., &c., (Notes recorded by Assistant Surgeon BROCKMAN.)

Present—Inspector General, and a large number of Medical Officers of the service.

Experiment I.—The following solution was made by dissolving dried cobra poison in Liq: Potassæ (B. P.), and water in the following proportions.

Cobra Poison, gr. i.
Liq. Potassæ, ʒss.
Aquæ, ℥ss.

A healthy chicken was injected with ♏xx of the above solution beneath the skin of the back of the right thigh at 12 h. 26 m. At 12 h. 31 m. the chicken was lively and did not appear to feel any discomfort. Was diligently occupied in removing a piece of paper which was tied round its leg. At 12-43 was walking about the ground, and was feeding unconcernedly. Was alive at 2-30 p. m., when experiments were brought to a termination.

Experiment II.—A similar solution having been prepared with the Liq. Ammoniæ fort., ♏ xx were injected under the right wing of a strong healthy chicken at 12 h. 28 m. 30 s. At 12 h. 31 m. symptoms of paralysis in the leg, with drooping of both wings came on, and incapacity of standing. At 12 h. 36 m. chicken alive, but restless, moving about spasmodically, and is unable to stand; head drooping, and eyes closing. At 12-43 it died.

Experiment III.—A full grown cobra was made to bite a Pariah dog on the inner side of the left hind leg at 12h. 13m. At 12-15 P. M. the following solution was prepared and injected.

Liq. Ammoniæ, ʒss.
Aquæ distill. ℥ss.

Dog died with the usual symptoms of cobra poisoning in 43 minutes. The exact notes of this experiment have been lost.

Experiment IV.—The following solution was prepared:—

Liq. Potassæ, ʒss.
Aquæ, ℥ss.

A full grown healthy dog was bitten by a full-sized cobra on the inner side of the left thigh at 12 h. 7 m. The cobra bit severely, causing the dog to struggle and howl. The dog was kept quiet, and at 12 h. 9 m. an incision was made over the right jugular vein, and the vein was opened.

At 12 h. 10 m. syringe needle was passed into the vein and
At 12 h. 10 m. 40 s. ℥i of the above solution was injected ;
At 12 h. 12 m. ℥i of the solution injected ;
At 12 h. 13 m. 30 s. ℥i do. do. ;
At 12 h. 14 m. 30 s. ℥i do. do. ;
At 12 h. 16 m. the wound caused by the fangs of the cobra was freely incised. The tissues presented a black colour in the immediate vicinity of the fangs.

At 12 h. 17 m. the wound was freely washed, first with pure water, and then with the potash solution. Contact of the Liq. Potassæ with the tissues caused very severe pain to the dog, and the tissues became at once blackened and charred.

At 12 h. 19 m. dog very lively, moves about ; no apparent paralysis of leg, but pain in the wound prevents the leg being placed firmly on the ground.

At 12 h. 24 m. is licking the wound on the hind leg. Has lost a considerable amount of blood during the operation of scarifying the wound. Appears to be lively.

At 12 h. 30 m. drowsiness coming on. Hangs his head. Is lying down.

At 12 h. 35 m. dog was placed upon the table, and a similar solution of Liq. Potassæ as above mentioned having been prepared, ℥i was injected into the right jugular vein.

At 12 h. 36 m. ℥i. of solution injected ;
At 12 h. 37 m. 30 s. ℥i. of solution injected ;
At 12 h. 39 m. violent convulsions set in, dog lying on its side, corneæ sensible. Heart's action good.

At 12 h. 47 m. corneæ becoming insensible. Heart's action becoming slow and irregular. Convulsive movements take place irregularly, lying on its side. Has lost a good deal of blood from the jugular vein.

At 12 h. 55 m. no movement. Heart's action has ceased. Dead. Death occurred in forty-eight minutes from the time of the bite.

Experiment V.—Poison from a sickly cobra which had just changed skin, was expressed into the bowl of a

spoon. A healthy chicken was selected, and about half a drop of the fresh cobra poison was applied, by contact, with a glass pipette, to a raw surface under the skin of right wing at 12 h. 46 m.

At 12 h. 48 m. 30 s. there were no signs of paralysis. The bird appeared to be in no way influenced by the application.

At 1 h. 2 m. P. M., alive, walking about and feeding. No visible symptoms of any action of the poison.

At 1 h. 29 m. up to this time the bird continued to be lively; it now suddenly exhibited symptoms of narcotism, the wings began to droop, the tail to fall, and the eyelids to close.

At 1 h. 34 m. is unable to stand, sits down. Head beginning to droop.

At 1 h. 42 m. head has dropt, the tip of the beak resting upon the table; eyesclosed. No convulsive movements.

At 1 h. 47 m. apparently asleep, when touched wakes with a start. Sphincter ani relaxed, giving exit to the bowel's contents.

At 2 h. in same state; convulsive movements beginning to manifest themselves, with short, sudden spasms, separated by a somewhat prolonged interval.

At 2 h. 15 m. dead.

Experiment VI.—A small granule of the dried cobra poison was placed upon the conjunctiva of the right eye of a chicken. After a few seconds severe lacrymation was produced, and severe pain. The granule was removed, and shortly afterwards evident swelling of the conjunctiva and of eyelids was to be noticed. Dr. Shortt stated that this condition would completely subside, and that the conjunctiva would return to its normal state.

Experiment VII.—A healthy chicken was forced to swallow about gr. ii. of dried cobra poison, followed by a little water. No effect seemed to have been produced, other than a sensation of uneasiness during and immediately after the poison was swallowed. At the termination of the experiments, the chicken was alive.

Experiment VIII.—The following solution was prepared:

Cobra poison, gr. i.
Aquæ, ℥. ii.

and ℥i of the same injected under the skin of the wing of a fowl in the left side at 1 h. 17 m. P. M.

At 1 h. 18 m. paralysis is coming on in that extremity. Bird becoming restless.

At 1-21 tail drooping, head drooping, bird is moping. Appears to be unable to stand upon the left leg, and rests entirely upon the right.

At 1-23 increasing drowsiness; head drooping.

At 1-25 unable to stand; wings drooping.

At 1-28 very drowsy; beak resting on the table.

At 1-31 head drooping, and inclined to one side. Can be roused by being stirred.

At 1-36 not dead; spasmodic movements commencing; opens its eyes if roused.

At 1-40 dead.

Experiment IX.—Blood from a poisoned chicken, from the large blood vessels of the chest and heart, was taken, and injected under the skin of the right thigh of a young fowl at 1 h. 27 m. P. M.

At 1-31 exhibited some symptoms of uneasiness; wings drooping, but was able to stand and move about.

At 2-15 was alive, and exhibited no symptoms of poisoning.

(To be continued.)

THE MADRAS MEDICAL FUND.

It is not without regret we have to record that the venerable Institution this Presidency has so long been proud of, will, in all probability, before the appearance of our April number, have ceased to exist. After many delays, and references to and fro, the Secretary of State for India has refused to guarantee to the Subscribers any advantages, which were not distinctly specified in the Act of Parliament, giving him the power to assume possession of the assets and management of the several Military and Medical Funds in India. The Subscribers would fain have hoped to have received an assurance that the Fund would, in the Secretary of State's hands, have been administered according to its established laws, but as the Parliamentary guarantee is silent on this head, the Secretary of State has fallen back on the strict letter of that guarantee, and will promise nothing beyond it, that is, until the Fund is virtually transferred to the State, when the Subscribers are assured that the important questions mooted by the Trustees in reference to the several branches of the Fund, including the Actuary's report on its present condition, will receive his most careful consideration.

In regard to the other Funds which have been given up to the Government, it is said, and we believe substantially with justice, that subscribers have been treated with greater liberality than they might in strict equity have demanded. We do not apprehend that the Subscribers of the Madras Medical Fund will be dealt with in a different spirit, but the condition of the Fund is so peculiar, that with the very best intentions in the world, it is quite possible for a Secretary of State to violate the spirit and letter of the rules, and to defeat the cherished desires of Subscribers, whose aim throughout has been the progressive improvement of the Institution.

We have never yet met anybody who was able to give us a satisfactory answer to the question, "Why seek to abolish the Indian Funds?" They were all more or less excellent Institutions, as regarded their objects and intentions. They encouraged the virtuous habit of self-denial on the part of men whose lives and labours had to be endured under the disadvantages of an uncongenial and unhealthy climate. They provided for the worn-out servant of the State, in a great measure by his own contributions, and for families, which otherwise would have had a lien on the benevolence of the Government. The Government no doubt gave important aid to these Funds. The Military Funds, in common with those established and still maintained by the all-powerful Covenanted Civil Services—got a regular rate of interest guaranteed on their capital. They possessed also the privilege of paying their constituents through the India Office at a fixed, and, on the whole, very favorable rate of exchange. But admitting to the full all the benefits conferred by the State or the Military Funds, it is unquestionable, that as a mere matter of economy, the Funds saved the Government an enormous outlay. While they existed, public servants paid very largely out of their own pockets for the decent maintenance of those whom they might leave behind them. Under the new system, widows and children will be left to exist as best they may on a pittance provided solely by the State. The cost of the pittance, however, will, there can be no question, be more than the Government contribution to the old funds.

Now in regard to the Madras Medical Fund, there were no reasons at all that we could divine, why it should have its existence cut short at the pleasure of Government. It was the oldest of all the Funds but one; it had never muddled away its resources, nor diminished its annual pensions, nor had it done any-

thing but acquire for itself the reputation of being the best managed and most prosperous Fund in all India. Suddenly, and without asking "with or by your leave," the Secretary of State announces that it is not intended that future members of the department shall, as a condition of their appointment, be required to subscribe to and conform to the regulations of the Fund. The constitution of the Madras Medical Fund was such that, in one of its branches at least, it could only thrive by the accession of new members, and the prohibition against admitting new entrants was the first step in the act which has placed the interests of very many persons at the mercy of the administration of the Indian Department of H. M.'s Government.

"The passion for Imperial symmetry," has, in this instance as in so many others, been destructive of a most valuable local Institution. The Medical Funds of Bengal and Bombay were wholly different in their constitution to the Madras Fund. They were simply founded to give the senior retiring members life-annuities, but the Madras Fund from its foundation, sixty-three years ago, until the present time, has steadily kept in view three important objects:

1. The provision of annuities for seniors.
2. The assistance of members leaving India in ill-health.
3. The granting of pensions to widows during widowhood, to sons to 21 years of age, and to daughters, until death or marriage.

How these objects have been carried out may be inferred, when we say that from 1808 to March 1869, it had paid away in annuities, money to the amount, in round figures, of £832,000, and in pensions to widows and orphans of deceased members £744,300, or in all something more than a *million and half* of pounds sterling. In the past sixty years, the Fund has pro-

vided about one hundred and eighty of the seniors with largea nnuities of £400 a year each, and has supported 181 widows and 430 orphan children. Notwithstanding all these heavy claims upon it, the Fund was never more flourishing or prosperous than at the present time, when its existence is about to close.

At the date of the last Cash Accounts for 1868-9, it possessed funded and other capital to the amount of nearly 65 lakhs of Rupees, viz.,

	Rs.	A.	P.
In the Charity Branch...	35,48,041	8	3
„ Sick Allowance do.	8,751	10	2
„ Annuity do	20,85,200	5	3
„ Reserve Fund.....	7,79,456	13	11
Rupees...	64,21,450	6	7

Considering how few members there have been, (the numbers have varied from less than 160 in the year, the Fund was established, to about 250 just before the termination of the reign of the East India Company,) it seems little short of marvellous that results so gigantic could have flowed from sources so apparently insignificant; yet the success of the Fund has been accomplished almost entirely by great self-denial and unsparing self-sacrifice on the part of successive generations of members. We could give instances of men whose careers in India have been constantly straitened by their payments to the Fund; payments not absolutely compulsory (for it is only incumbent on Subscribers to secure minimum rates of pension), but payments made entirely in the interests of families, to secure the best possible contingent advantages for them.

As we have stated before, the Madras Medical Fund differs from all other Institutions of the kind in being a progressive Fund. In the Annuity Branch for example, the aspirations of the earlier Subscribers

were limited to two annuities of £400 a year. By and bye it was felt that a small annuity of £200 a year for members whose health had given way in India would be desirable, and a small annuity was established, in addition. Later still, as the strength of the Department increased, it was found that three annuities were insufficient, and rules were provided for giving off as many more as there were funds available for. At the present time the Fund gives off one small and four large annuities annually, in addition to extra annuities which come at uncertain intervals, and this notwithstanding that the Subscribers have been reduced in number from about 250 to 150 by the non-entry of new members. The Annuity Branch would by this time have been placed on the footing of a deferred annuity society, had not the operations of the Home authorities, in cutting off the supply of new members, paralysed all the efforts of the service in that direction. The Subscribers have, however, in the last twelve years, notwithstanding the great disadvantage of having no new entrants, been enabled to accumulate nearly eight lacs of Rupeesin the unappropriated or Reserve Fund.

But it is in the Charity Branch that the greatest triumphs have been accomplished. Up to the year 1838, this branch of the Fund was in a very shaky condition, financially; the members in fact were paying too little for the benefits they expected to secure for their wives and children. On a reference to Mr. Griffith Davis, the Actuary, that gentleman showed how deficient the subscriptions and donations of existing members had been to provide for the liabilities, and he gave tables showing the amount of arrears required to put the Fund in a sound state, as well as the payments to be made in future transactions. These arrears, we may state, were met by "a long pull, and a strong pull, and a pull altogether," at the purse strings of each Subscriber

concerned. A surplus sum in the Sick Allowance Branch was also transferred to meet the deficit in the Charity Branch. From 1842, when these increased payments began to come in, the assets of this branch have been most flourishing.

The business is in fact simply that of life insurance, under very favorable auspices as regards interest on money and remittances. Each member pays for his wife or child the exact value of the pension he desires to secure; he asks nobody to help him. Bachelor members contribute nothing whatever to the assistance of the Benedicts, and *vice versa*.

At the latest triennial valuation of this branch of the Fund, there remained of

Capital.....	Rupees	35,73,219
The Liabilities were	,,	32,18,849
Excess of capital....	,,	3,54,374

After deducting the necessary payments for a portion of the year, the "net surplus" stood at close upon three lakhs. This branch of the Fund, in short, has been for many years past making very nearly a lakh of Rupees a year of profit on the business it transacts.

The important question has lately come up what to do with these profits. Hitherto the Reserve Fund of the Annuity Branch has, by law, had a lien upon them. But Subscribers have begun to think that the Annuity branch can take care of itself and that profits should be applied to the benefit of the assured, as is done in Insurance Offices, when bonuses are added on to the original policy. One of the latest acts of the Subscribers was to vote an increase of five per cent. to the pensions of widows and daughters above 21 years of age, out of the existing surplus. This step has absorbed about one-half of the three lakhs. Another valuation will be made of the assets and liabilities on the 1st April of this year, when it is

most likely there will be at the least three or four lakhs of Rupees of additional surplus to be declared.

Under the new rules, this money would be applied to the increase of pensions; indeed for many years to come, it seems probable that triennial additions could be made to the payment to widows and children, but the Fund is to be handed over to the Secretary of State, who may, or may not, guarantee the continuance of these progressive benefits.

It is obvious that if the funded capital is absorbed by the Government in the squaring of deficits in Indian Budgets, and if only accounts of receipts and expenditure are in future kept, it will be impracticable to determine the amount of profit accruing in the triennial periods. Here, in fact, consists the great hardship of applying to a progressive and flourishing Fund the identical guarantee offered to bankrupt concerns, which had nothing to lose, and everything to gain. It is this point alone which has induced some few Subscribers to pause before accepting the obvious advantages of the Government guarantee. They think in fact the Fund being so flourishing, that the guarantee should extend to prospective, as well as to present advantages.

We have no reason to doubt that the interests of members will be tenderly dealt with when the Fund is transferred to the Government. Still in a business transaction, as this really is, tenderness is not so much a consideration as strict justice. In the transfer the members will undoubtedly be taking "a leap in the dark," but if the leap turns out so satisfactory in the future as the memorable one of Mr. Disraeli in the political world has done, the Fund Subscribers will have no great reason to complain.

A MADRAS MEDICAL SOCIETY.

In our last number we suggested the formation of a Medical Society in this Presidency as one of the means by which the strength of the profession might be concentrated and more advantageously applied in many ways. The benefits which would result from such an association are so many and so obvious, that we have often wondered that no attempt has been made, at least of late years, to bring together periodically for scientific purposes the medical men, nearly forty in number, who reside in Madras. A dim tradition tells, indeed, of the establishment of a Society of the kind which *miscuit utile dulci* by combining scientific meetings with dinners at the Club. The latter element of the combination, however, gradually came to preponderate over the former. The *physiologie du gout* was cultivated more ardently and successfully than the other objects of the Society, until finally we believe, the monthly dinners alone remained to attest the devotion of the Madras profession to their art. But we, like Diomede, boast to be better than our predecessors. We can plant our little scientific seedling without thinking it necessary to place beside it for shelter a tree of ruder growth, to overshadow soon and ultimately destroy.

There is no city in Europe or America with a dozen resident medical practitioners which does not maintain a medical association of some kind. Not to speak of London, Dublin or Edinburgh or other great seats of medical education, we read with pleasure and profit Proceedings of Societies in Birmingham, Liverpool, Newcastle, Cork, &c. &c. Calcutta has a branch of the British Medical Association; Bombay, with less material of every kind than Madras possesses, supports with apparent ease not only a branch of the Royal Asiatic Society, but also a society for the cultivation of medical science. There can be no reason

why we in Madras should shrink from competition with most—or indeed any—of the cities we have named in efforts to speed the progress of discovery and research and bring the experience of each member of the profession to aid by encouragement or warning the general body in its contest with disease and its pursuit of hidden truth. The Madras Literary Society indeed, is in a cataleptic state, evincing continued existence only by maintaining a languid "circulation" of a somewhat spanæmic character, and by occasional spasmodic efforts to induce Government to pay its funeral expenses. But this "fearful example" need not deter the members of our profession in Madras from associated efforts to further medical Science. The devotees of literature and general science in the Presidency town would not severely tax the enumerative powers of the Tououpinambos who, if Locke does not libel them, could only count to five; but in Madras and the three neighbouring stations nearly fifty fully qualified medical men permanently reside, besides a numerous body of carefully educated medical subordinates. All these must—some greatly, some, no doubt, less—desire to improve themselves and benefit their brethren by combining to throw into a common stock the results of their observation and experience, by meeting for friendly discussion and by strengthening that *esprit de corps* which is no where so indispensable as in India.

Two subjects occur to us as specially needing the aid of a Medical Society for their effective cultivation. —Pathology, and what we may term Indigenous Therapeutics. As regards the former, the prejudices of the natives, stronger even than those of the less instructed classes of our own countrymen, interpose serious obstacles to its study. The difficulty will be considerably reduced if the few opportunities which do arise are fully utilized by extending as widely as possible the circle to which morbid preparations, illustrated by a

detail of symptoms, are open for study. Such extension a society with monthly or fortnightly meetings will supply. The effects and proper use of the indigenous Materia Medica we conceive to be a subject of great and growing importance, not merely on financial grounds (which are less than secondary) but as likely to yield us increased power in dealing with indigenous disease. The subject is one which a Society can best pursue, by directing objects and methods of inquiring, sifting and tabulating results, and making the net issues of inquiries accessible to practitioners.

Should the members of the profession in Madras and the neighbourhood concur with us (and with those to whom we have spoken on the subject) in thinking the establishment of a Medical Society desirable and practicable, there will be no difficulty in settling the details of its constitution and mode of working. We are authorized to state that the theatre of the Medical College would be available for Meetings. We are not without hope that arrangements might be made which would open the valuable Library and Museum of that Institution more freely to the professional public, through the Society, than they are at present, when it would almost seem that their very existence is unknown beyond the circle of the Professors. The Medical Book Society, now defunct, has left a large collection of the older professional works, which most of those who subscribed to it would, we believe, gladly consent to transfer to the Medical College if some such arrangements as we have indicated can be made. In conclusion, we offer the cordial assistance of the conductors of this Journal to the formation of such a society as we have suggested.

OUR LOCAL "MATERIA MEDICA."

THE labors of Mr. J. Broughton, Government Quinologist at Ootacamund, bid fair to furnish very important results to the medical profession in India.

Very shortly the whole of the Chinchona alkaloids required for the use of Indian Hospitals, will be manufactured under that gentleman's superintendence.

When Mr. Broughton came out in 1867 to take up his present work, he brought with him some tubers of the true Mexican Jalap. The plants thrive very well on our Hill ranges, and at Ootacamund under Mr. Broughton's care, they have increased and multiplied in a very satisfactory manner. A few weeks since Mr. Broughton submitted to the Inspector General Indian Medical Department specimens of powdered jalap root, and of the resin of Jalap (Jalapine) extracted therefrom.

We have been favored with an inspection of these products. The jalap powder is rather paler in color than the ordinary jalap of commerce, and the peculiar odor of jalap is in some degree wanting. The mechanical sub-division is not so complete as we usually find in jalap powder, but that can easily be rectified when proper machinery for grinding is available. The quantity sent to the Inspector General (five ounces) has been issued to some of our hospitals for a practical trial of its purgative properties. The results we hope to lay before the profession in due course.

Mr. Broughton states that the Neilgherry Jalap is particularly rich in resin, and as the resinous matter contains the purgative material of the tuber, it may fairly be hoped that the Neilgherry Jalap will command a good price in the market. Jalap is a favourite purgative with the natives of India, and the Neilgherry produce ought to find a ready local sale. In this respect also, we

hope that India will soon be self-supporting. The specimen of Jalapine sent by Mr. Broughton appears to be particularly good. It has been issued to Hospitals for experimental trial.

The next new remedy we have to notice is one which ought to find general favor. It is "Turtle oil," introduced by Native Surgeon Anthony of Madura, as a substitute for Cod liver, or fish oil. The specimen we have seen consists of the oil in the rough. It contains apparently a good deal of stearine, which separates from the fluid oil, as a whitish deposit. In taste, color and odor, it resembles the better specimens of Cod liver, or Indian Shark oil, and may, according to Mr. Anthony, be used in all cases in which these oils are indicated. It seems that in the Straits of Manaar between Ceylon and India, turtles abound, and the natives utilize the oil extracted from them in caulking the seams of their fishing boats. Mr. Anthony in the course of his enquiries, whether fish oil could be obtained on the Madura coast, learnt that the cheapest oil prepared in that locality was that obtained from the turtle.

The remedy when properly prepared for the English market ought to command the notice of aldermen and *bon vivants* in general. They will be merely using the "green fat" they delight in, somewhat less daintily dished up.

STATE MEDICINE.

WE have not space in our present number to do more than draw attention to the important legislative measures recently introduced to the notice of the local council by the Hon. A. J. Arbuthnot.

On a future occasion we hope to be able to discuss the provisions of the "Towns Improvement" and "Local Funds" Acts, in so far as they relate to the sanitary welfare of the teeming millions of the Madras

Presidency. Meanwhile we feel assured that we express the sentiments of every member of the medical profession, who has labored amongst the people, in saying that no measures that have been introduced for the better government of the territories of the Queen in India, have been of greater importance to the happiness and well-being of the inhabitants, than the broad and comprehensive schemes of sanitary administration, and medical education, which are foreshadowed in Mr. Arbuthnot's new bills.

We, who for many years, have preached Sanitary reform to deaf and unwilling ears, have a peculiar gratification in observing that the good seed sown by the reformers of the past and present generations, is about to bring forth abundance of fruit. That the bills may undergo modification in committee is of course probable, but we trust the framers will maintain, in their integrity, the sections which bear on the questions we have so much at heart, viz., the sanitary inspection of municipalities and rural districts, the extension of dispensaries for medical relief, and the education of the race of indigenous physicians.

Those who know the present condition of India, increasing prosperity of the people, and their appreciation of, and willingness to be taxed, moderately but fairly, for medical relief, will have no fears as to the ultimate success of the measures now under discussion.

The career of Lord Napier as Governor of Madras has been marked by an earnest and enlightened attention to the sanitary wants of the people. From the time when his Lordship visited the famine and cholera-stricken districts of Ganjam, when he saw the misery of the people, and the very inadequate provision for their medical relief, no opportunity has been missed of doing something to better the condition of the people in this respect. New dispensaries have been founded and maintained, and the other charities have been ad-

ministered with more zeal and earnestness. The Contagious Diseases Act has been introduced and given effect to, in Madras, with the best possible results in the diminution of the aggravated types of disease which formerly prevailed. The contemplated measures for sanitary inspection of rural districts and the education of medical practitioners, will not be the least of the works for the good of the people, on which Lord Napier may look back, in the resignation of his high office with pardonable pride and satisfaction.

OFFICIAL CHANGES.

Drs. Barclay and Ranking have been appointed Deputy Inspectors General, in the room of Kennedy retired, and Balfour, whose five years of office have expired.

Mr. Cornish will succeed Dr. Ranking in the office of Sanitary Commissioner of Madras.

REVIEW.

Report of the Conservator of Forests for the Official year 1868-69. MADRAS: 1869. Pp. 96.

WE opened this somewhat voluminous Report, hoping to find in it something if not of medical, at least of scientific interest. We must confess we were disappointed. From a sanitary point of view, the only fact which seems to stand out in uncomfortable prominence, is that employment in the Forest Department is exceedingly disagreeable and unhealthy. "Health bad" seems to be the burden of the sanitary paragraph of every subordinate report. As Government, in its Order Thereon, has condescended to indicate possible improvements in the form of future Reports, we shall hope to find some pabulum for a Reviewer for a scientific journal in Major Beddome's next attempt. From a skilled naturalist, we shall expect original and valuable remarks upon the Flora and Fauna of the little-known forest regions of the Presidency. There is another subject, too, of universal interest and importance, which is not noticed at all in the present Report, but to which we feel sure the Conservator has given attention, and on which we hope for some information next year. The effects of forest clearing upon rainfall and climate is attracting attention all over the world, and is nowhere of more importance than in India. Dr. Cleghorn paid a good deal of attention to the subject, and we expect that Major Beddome will do no less.

The only section of the Report which we propose to notice, and that but briefly, is that which refers to plantations and nurseries. The Government Order states that "on the whole, and with the notable exception of the Neilgherries, planting operations during the year have proved a failure." The exceptional dryness of the season in part explains this fact.

Turning first to the exception, we find that, in spite of the rats, "in the Eucalyptus plantation at Ootacamund, 1814 young trees of Eucalyptus have been planted out, and 780 Pinus Pinaster (*var,* Maritima) and a large quantity of Eucalyptus globulus have been mossed, and 7,500 are now

ready for planting." The following extracts also may be interesting as showing the progress of acclimatization.

137. *Rapid growth and value of the Blue Gum.*—The great value of the timber of Blue Gum or Eucalyptus globulus is not generally known; in Australia it is the best building timber known (though most of the numerous species of Eucalyptus yield valuable timbers), and is said to be fully equal to the best Indian teak; its rapidity of growth on these hills exceeds that of any tree indigenous or introduced, and has been the admiration of all Forest Officers who have visited our plantations. Its cultivation should be largely extended on all our hill ranges; it grows well on grass land, but its growth is not nearly so rapid as in Shola land; the planting is more expensive and precarious, and it is much affected by wind. All sholas thinned out or deforested for firewood should be renewed with this tree. It exhibits the most favorable growth when planted inside sholas of the indigenous trees (particularly in the ravines) as it soon overtops all the native trees, and it has complete shelter from the wind when young; one tree in such a locality in the grounds of Gayton-park at Ootacamund, may be mentioned as quite a sight: it is upwards of 12 feet in girth, and of enormous stature. If the Railway is to be extended to Cullar, the ravines up the Coimbatore slopes of the hills might be largely planted with this tree at elevations above 3,500 feet. In Australia this tree has been measured upwards of 400 feet in height and 40 feet in girth.

138. *Introduction of new trees.*—The colossal Eucalyptus fissilens (or Missmate), the Eucalyptus Stuartiana and Eucalyptus sideroxylon, and several other species, have been introduced during the year, and are growing well. Application has been made to Australia for the three different species of Járá (Eucalyptus Mahagoni, rostrata and marginata) which yield such valuable sleeper timber, and are said to be impervious to the attack of the sea-worm; they have not yet been received. There are a few young plants of the Eucalyptus Mahagoni at Ootacamund, but the other species have not yet been introduced.

The following trees were received during the year from Kew in large Wardian cases, they arrived in first-rate condition; and are growing very well in the Nurseries on the Neilgherries.

100	Quercus pedunculata	British Oak.
100	„ cerris	Turkey Oak.
100	Castanea vesca	Sweet chesnut.
100	Æsculus hippocastanum ...	Horse chesnut.
100	Fraxinus excelsior	The Ash.
25	Ornus Europeus	The flowering Ash.
75	Carpinus betulus	The Hornbeam.

A subsequent case containing several hundreds of the two species of Oaks, was forwarded to the Pulney Hills.

A large quantity of the seeds of all the above, besides seeds of the Sycamore (Acer pseudo-platanus), the Norway Maple (Acer platanoides), the Alder (Alnus glutinosa), the Lime (Tilia Europea), the Birch (Betula alba), and the Beech (Fagus Sylvatica), were also received in a dry box, but they had all lost their germinating powers from having got damp. Seeds of some of the above placed in the soil in the Wardian cases in between the plants all arrived in good condition and are now growing well in the nurseries.

The Quercus cerris, or Turkey Oak, has never been introduced before ; the common Oak grows here and becomes a small tree, but is very poor compared to what it is in Europe.

The sweet chesnut will probably answer, but it is not expected that the growth of most of these deciduous trees will be favorable on these hills, as they require the winter.

The Walnut grows so well on these hills, and fruits so abundantly, that its cultivation on a larger scale is very desirable, if only for its valuable timber.

* * * *

Amongst coniferæ, no tree grows here more rapidly or finer than the Himalayan Cupressus torulosa, and its extended cultivation should be attended to ; it is highly ornamental, and the timber is valuable.

The Pinus, Pinaster *var,* Maritima, was largely introduced last year ; and is growing very well, it will be a valuable introduction as its growth is rapid and good, as proved by several trees of ten or twelve years standing in the Botanical Gardens.

* * * *

Seeds of the following fast growing Australian trees not previously introduced, were received from Australia at the close of the year, and were consequently handed over to the Commissioner ; most of them are trees with spreading tops, a great desideratum.

Acacia pycnantha (a tree of great beauty.)
„ implexa.
Callitris cupressiformis.
Callitris Gunnii.
Casuarina paludosa.
Exocarpus cupressiformis.
Myoporum insulare.
Tristania longifolia.

The Officiating Conservator has been in correspondence with all the forest Officers in India and Burmah for the exchange of tree seed, etc., also with Kew, the Mauritius, Australia and Ceylon. Seeds have been forwarded from our different forests to Kew, Ceylon, the Mauritius, Australia and different parts of India.

139. *Advantages and disadvantages of the two common Australian acacias.*—The Acacia dealbata (Link), or Australian wattle (often but erroneously called Acacia mollissima on the Neilgherries) and the Acacia melanoxylon, or Australian Blackwood, are unrivalled on our hill ranges for firewood plantations or as screen from the wind, and the former grows wonderfully as coppice, and the latter has very valuable timber ; the former however is a perfect nuisance in small grounds or gardens and bids fair to overrun some parts of the station of Ootacamund, as can be easily seen in the Bishopsdown grounds and many other places. Its roots spread most rapidly in every direction, and suckers come up by the thousands to the exclusion of all other vegetation. The roots of the latter tree also spread considerably, and are a great nuisance near roads ; nothing will grow near either tree without constant digging and removal of roots. If Ootacamund was deserted, the whole basin would probably at no lengthened period become a forest of these trees to the exclusion of almost all other vegetation."

Looking now at "our failures," we see that in Cuddapah District an attempt at growing Babool (Acacia Arabica) and Nim (Melia Azedarach) from seed failed, owing to the heat and drought. The western coast is considered to possess a climate better suited to the experiment than the dry districts. In Kurnool, sixteen Chinchonas which remained at the end of the year died off in the hot season, as might be expected, and the experiment will not be tried again. Teak planting failed too, although tolerably good trees are occasionally found in the hills, sheltered in ravines or otherwise. In North Arcot casuarinas seem to thrive pretty well, although the season was dry and unfavorable, and the same season interfered with the success of operations in the Western ghauts. On the whole, it is evident that the Forest Department has done little for India in the way of acclimatization, except at Ootacamund, and there the experiment seems to have slipped out of their hands into those of the all-powerful Revenue officers. There are traces in this Report of a good deal of jealousy between the two departments, and obstructiveness on the part of the Civilian officers, which would be amusing if it were not so obviously detrimental to the interests not only of India, but of science, so far as it falls within the province of the Forest Department to cultivate it.

MEDICAL MISCELLANY.

Case of Snake (Cobra) Bite, successfully treated by Suction, Liquor Potassæ and Brandy. By JOHN SHORTT, M. D., F. L. S., M. R. C. P. L., &c., Surgeon, Supt. General of Vaccination, Madras Presidency.

A NATIVE named Goorooven, who was in the habit of bringing me snakes (cobras), came on the 8th January 1870, and presented himself at my house, accompanied by a friend of his, who brought a fresh vigorous cobra, over five feet in length, in a small covered earthen chatty.

Goorooven's friend was asked to show the cobra, which he did, and on examining and finding that the fangs were intact, I directed him to put up the snake again, and went into the house.

In a few minutes, my peon came into the verandah, and said "He is bitten." I ran out, and the peon pointed to Goorooven, who stood on the steps of the house, with his hands hanging down, while the index finger of the left was extended, with blood flowing from two points on the back of the second phalanx.

I pulled off the eye-glass from my neck to save time, and cutting the cord to which it was attached, tied one portion around the base of the wounded finger, and another across the wrist. With the penknife from my pocket, I opened out the punctures to the extent of a quarter of an inch, applied my mouth to each of the wounds in succession, and sucked vigorously several mouthfuls of blood; meanwhile, a basin of cold water having been brought, the wounds were well washed, and had liquor potassæ applied freely to each. I next gave the patient three ounces of brandy, with ℥ss. of liquor potassæ, and then applied two other ligatures, one above the elbow, and the other high up around the arm as tight as possible, so as to stop the circulation in the part; and on looking at my watch, I found it 12-25 P. M. I ordered my carriage, as having but a few days ago shifted into my present quarters, every thing was in confusion, and I thought it advisable to take the patient at once to the General Hospital for further treatment. Neither horsekeepers nor coachman were to be found, but, with the assistance of a cooly who happened to be in the compound, I had the horses harnessed and put into the carriage, and placing the patient in it, drove off to the General Hospital, where we arrived at 12-40. P. M. The Apothecary on duty readily received the patient, and attended to the in-

structions that I gave him, while I awaited the arrival of Dr. Thomas, the Resident Assistant Surgeon, who had been sent for.

Dr. Thomas soon arrived, and very kindly allowed me to suggest the treatment to be pursued. At my request, Mr. Allan, the Apothecary on duty, took careful notes of the temperature and pulse, as well as of the case generally, from time to time, which I am sure will be read with interest by the profession generally. I also submit a table with diagram showing the rise and fall of the pulse and temperature drawn up by Mr. Allan. I remained at the Hospital five hours (till 5-30 P. M.) and then went home; visited the patient again at 8-30 P. M., and left him to the care of Mr. Allan at 9-30 P. M. The patient was now thoroughly drunk from the effects of the brandy he had taken, and was talking incoherently. I drove over to the General Hospital the next morning, and was happy to find the patient quite well, walking up and down the verandah, with his arm in a sling; and, according to the rules of the institution, he was now transferred to the care of the Officiating Surgeon, R. W. Cockerill, Esq., for further treatment.

Morsus Serpentis.

Goorooven,—Age, 30; Caste, Jogee; Occupation, Snake-catcher; Temperament, Sanguine.

8th January 1870, admitted into Hospital at 12-40 P. M., reported to have been bitten severely by a cobra in the house of Dr. Shortt, while in the act of securing the snake in a vessel. The bite was very severe; shortly after incised and sucked out, and ligatures were applied very tightly round axilla, wrist and first phalanx of index finger of left hand. The man was bitten on the back of the second phalanx of left index finger. After admission, a screw tourniquet was applied about the insertion of the deltoid muscle, and two large veins on the dorsum of left hand were opened, and his hands placed in a basin of water containing liquor potassæ ℥iv to a gallon of water. At 2 P. M. his pulse was 60 per minute.

Ordered—Brandy, ℥i.
Liquor Potassæ, ℥ss.
Aqua, ℥i.

To have the hand immersed in warm water containing liquor potassæ ℥iv. to a gallon.

2-15.—Pulse 64.

Continued Brandy with Liquor Potassæ.

2-30.—Pulse 66.

Continued.

2-45.—Pulse 64.

Brandy, ℥iss.
Liquor Potassæ, ℥ss.
Aqua, ℥i.

3.—Pulse 60.

Brandy, ℥ii.
Liquor Potassæ, ʒss.
Aqua, ℥i.

3-15.—Pulse 62.

Nil.

3-30.—Is now under the influence of alcohol, the ligatures round axilla removed, much pain complained of, pupils normal, pulse 65, temperature 92°. Chloroform to be rubbed into the painful part, and to have

Brandy, ℥ss.
Liquor Potassæ, ♏xv.
Aqua, ℥i.

3-45.—Pulse 63, in other respects the same.
Continued Brandy with Liquor Potassæ.

4.—Pulse 66, temperature 88°, pupils normal. Is still under the influence of alcohol. Pain still complained of, very much in arm. Continued chloroform friction and brandy with liquor potassæ.

4-15.—Pain a little relieved, pulse 66, respiration 30.
Continued Brandy with Liquor Potassæ.

4-30.—Temperature 88°, pulse 64, pupils normal. Is inclined to sleep, but is kept awake by the pain in arm, which, he says, is intense, and begs that the tourniquet be removed; veins bleeding freely.

Chloroform friction; continued Brandy with Liquor Potassæ.

4-45.—Pulse 66, repiration 26, pupils dilated and rather sluggish. Pain a little relieved; still under the influence of alcohol.
Continued Brandy with Liquor Potassæ.

5.—No change.

Tourniquet removed.

To have brandy with liquor potassæ every half hour, and ordered to be kept steadily under its influence. Bleeding arrested by pads of lint and bandage. Hand to be immersed in cold water containing ℥i. of liquor potassæ to a gallon of water.

5-15.—Pulse 84, respiration 20, temperature 90°, pupils dilated and rather sluggish.

Brandy, ℥ss.
Liquor Potassæ, ♏xv.
Aqua, ℥i now, and repeat only if required.

6-15.—Pulse 86, full and bounding, respiration 24, temperature 88° in the axilla of affected hand, of unaffected axilla 94½°; pupils normal, remains drowsy and noisy.

7-15.—Pulse 108, temperature 97° in axilla of unaffected side, and 94° in axilla of affected side; complains of great pain in the bitten hand. No bleeding except from the bite.

8 P. M.—Bleeding arrested by a small pad and bandage. Had a pint of conjee (arrowroot); is quieter.

9.—Complains of great pain.

Brandy, ℥i.
Liquor Potassæ, ♏xv.
Aqua, ℥i.
Chloroform friction.

10.—Appears to be in great agony, grinding his teeth and stamping his feet on the ground, and on this account I am unable to take the temperature of his body. Pulse 104, pupils dilated and sluggish. Chloroform friction.

12.—Patient is quieter, does not complain of pain, passed urine for the first time after admission at 11½ P. M. Temperature in right axilla 99,° in left 100.° Pupils less dilated and not so sluggish. Half a pint of soojee conjee every two hours.

1 A. M.—Patient does not look drowsy; pupils normal; pulse 108; temperature of left axilla 101°, of right 100° ; voided urine.

2 A. M.—Pulse 112; pupils normal; temperature of left axilla 100,° of right 100½°.

4 A. M.—Pulse 112; temperature of left axilla 100°, of right 98½°, pupils normal. Complains of pain in the bitten hand, and begs that the bandage be removed. Case made over to Dr. Cockerill at 8 A. M.

9th January 1870.

(Signed) B. B. Allan,
Asst. Apothecary on duty General Hospital.

9th.—The patient only remained 24 hours in hospital under the care of Dr. Cockerill, and took the liquor potassæ in ten minim doses, with ℥i. of brandy every four hours. He took in all ℥i. of the liquor potassæ, and ℥vi. of brandy. The bandages were removed and lead lotion was applied to the hand.

10th.—The patient having left the General Hospital at his own request, presented himself at my house at 9 A. M. Forearm and hand swollen, some three or four small blisters about the size of a six-penny bit on the back of the hand. Wound looking sloughy.

Nil.

11th.—Much the same as regards the swelling of the forearm and hand, but the patient feels in other respects quite well. Brandy ℥ii. Water dressing to wound.

13th.—Did not put in an appearance yesterday, but came this morning. Swelling of forearm and hand subsiding. The two last phalanges of the index finger have mortified, and the part looking black and shrivelled. Is otherwise quite well.

Nil.

Remarks.—I feel diffident to talk of myself, but in the cause of science and truth, I must suppress my own feelings and relate facts.

The blood I sucked out of the wound had a very peculiar taste, and although this attracted my attention, I was in too great a state of excitement at the time to remember what the taste was like. I felt nothing strange till about a couple of hours after the accident had occurred, when I began to feel a tightness across the gums and roof of the mouth, in the space between the two incisors. This was followed by a sharp stinging pain of a peculiar burning character. I was somewhat restless and uneasy, and shortly after began to feel languid and faint, when, for the first time, it struck me that I might have imbibed some of the poison into my system. I became alarmed and anxious about myself. I then lay down on one of the hospital cots, next the patient's, for a few minutes, and, on telling Dr. Thomas that I was not feeling well, he kindly suggested that I should have some brandy and water, which I did, and felt somewhat better after it ; while the pain and uncomfortable feeling in the roof of my mouth continued, and my bowels were inclined to act. I did not give in to the feeling, but resisted it altogether. At 3 P. M. the uncomfortable feeling extended not only to the roof of the mouth, but to the same extent in front of the incisor teeth, to the gums under the upper lip. I had lost my appetite for dinner in the evening, and on retiring to bed as usual I slept soundly that night ; but about 4 A. M. next morning, I was awakened by an acute burning pain in the roof of the mouth, which continued for a couple of hours and then left, leaving behind a soreness, not only at the roof of the mouth, but extending to the tongue to the extent of an inch from the tip. This feeling became more acute on attempting to take my usual cup of tea, nor could I taste any curry or other dish prepared with condiments which did not give me instant pain.

10*th.*—The roof of my mouth and tongue are very sore and tender this morning. In other respects I am quite well.

13*th.*—The roof of my mouth, gums, and tongue are still tender. I believe the sucking out of the poison from the wound was the main cause of saving the man's life, yet, at least five minutes if not more must have elapsed between the time the man was bitten and the suction of the wound, and there must have been ample time for some of the poison to have entered the system. The cobra was fresh and vigorous, and the effect produced in my mouth was the best evidence that ample poison was injected into the wound. I believe the subsequent potash treatment, both internally and externally, in which I solely depended in this case, had its action expedited by the stimulant effect of the brandy, and aided materially in perfecting the cure.

I would here observe, that sucking a poisoned wound, and especially that occasioned by the cobra, where the venom is so very

powerful and energetic, will always be attended with risk to the operator, and most probably imperil two lives instead of one. Under these circumstances, to obviate this risk as much as possible, I would suggest that in those cases where it is feasible, the patient himself should be urged to suck out the poison from the wound, so as to reduce and confine the peril to the individual who had the misfortune to be bitten. I hope on a future occasion to detail a mode of treatment to be pursued in all such cases. Of course there is nothing new in the sucking of a poisoned wound; this is well-known to medical men generally; I only claim the fact of having brought it practically into successful play; but the potash treatment is original and my own, based upon numerous experiments, carried out from time to time at much expense, trouble, and risk.

The accident is said to have occurred thus :—After I had examined the snake, Goorooven seized it, and thrust it tail foremost into the earthen chatty in which it was brought, and having placed the whole of the snake bodily in the vessel, he held its head with the thumb and forefinger of the left hand, and held the cocoanut shell ready to shut the mouth of the chatty with his right hand; in letting go the head of the snake, he appears not to have been sufficiently quick with the shell in covering up the chatty, and, just as he let it go, the snake, which was in an excited state, flew at and seized the back of his index finger. The bite was severe, and but the work of a moment; the man himself became greatly alarmed, and being alive to the results of such accidents, alluded in desponding terms to his wife and children. I had much to do in allaying his fears and cheering him with hopes of recovery.

These men, as a class, are a very rude set, and are fully aware of such dangers, but from habit they soon grow reckless. In fact, I often wondered that accidents of the kind did not occur more frequently; and that they *do* occur is certain, though nothing is known of such occurrences, as the people live in the outskirts of the town or village in small scattered communities, consisting of a dozen huts at most, and from erratic habits, are constantly changing their abode from place to place so as to render little or nothing known regarding them.

I believe this is the first authenticated instance in which a man, fairly bitten by a fresh vigorous cobra, recovered by rational treatment. It is a source of pleasure and thankfulness to me that I have been the humble instrument in saving this poor fellow's life, though it was at the risk of my own; and in the saving of the life of this single individual, I feel that I have been amply rewarded for the trouble, risk, and expense I have been hitherto put to in the several experiments which I have been conducting from time to time since 1866.

The objects I had in view were,

First—To remove, if not all, as much of the poison from the wound as was possible, by suction.

Second—To arrest the poison being carried into the system by the application of the several ligatures along the hand and arm.

Third—To destroy any portion of the poison that may have been left in the wound by the free application of the liquor potassæ.

Fourth—The liquor potassæ was given freely internally, with the view of saturating the blood, so as to render it thoroughly alkaline, that any poison found in it may be decomposed.

Fifth—At the Hospital, the screw tourniquet was applied to supersede the other ligatures as being likely to cause less pain than that produced by cords. The tourniquet was maintained for four hours continuously, and through fear that mortification would ensue if continued longer, it was removed. After the application of the tourniquet, two of the largest veins on the back of the hand were opened with a lancet, and emptied of their contents with the view of relieving the vessels of the arm of any poisoned blood that they may have contained, and the hand up to the elbow was immersed in warm water, containing from one to four drams of the liquor potassæ to the gallon, for about four hours, to encourage bleeding; and cold water containing the same quantity of the liquor potassæ substituted for the next four hours; and as the veins continued bleeding more freely than was intended, the bleeding was arrested by pads and bandages. The potash bath to the arm was continued for eight hours with the hope that some portion of the potash might be absorbed through the skin, and destroy any poison that might have been taken up between the wound and ligatures.

Two Cases of Ovariotomy. By Professor W. H. Harris, M.D., Superintendent Lying-in Hospital, Madras.

Monocystic Ovarian Cyst; Ovariotomy; Death.

Mrs. N., Æt. 22, an European, married four years, never pregnant, was admitted into the Lying-in Hospital on the 16th February 1868 with an enormous ovarian cyst, and gave the following history of her case.

Before July 1867, she had always enjoyed excellent health and catamenia had been regular. She then suffered from pain in the left side, increased at the periods, and observed that she had became much stouter than usual. Her weight was then about 16 stone (224 lbs.) No tumour had been perceived in either iliac region, but during the following month (August) the abdomen increased in size daily. In October she came to the hospital, and attended as an out-patient until 25th November, when she was

admitted under Surgeon H. King, M. B., who recorded the following notes of her case :—

Admitted on 25th November, having previously attended occasionally as an out-patient. She complained of great increase of size, both general and abdominal. On the 2nd instant, a careful examination was made, when it was ascertained that she was not pregnant and she has since menstruated regularly. Her weight was then 286¾ lbs, and she measured 59 inches in girth at umbilicus. There was very obscure fluctuation. She had previously applied for treatment of irritability of stomach, which had yielded to the remedies employed. During the three following weeks she felt herself increased in size, and was suffering from the effects of the enormous distension of the abdominal parietes. Her circumference had increased about two inches, and her weight was 305 lbs. on the 23rd. Fluctuation was more distinct especially at the left side, but the great obesity with which the case is complicated, renders diagnosis of the nature and situation of the fluid very difficult. The distension of the skin of the abdomen is so extreme that operative interference of some kind will be necessary, and she was therefore admitted into hospital. Since admission the treatment has consisted of hydragogue cathartics and diuretics, but so far there is no improvement in her condition. Her urine is scanty and very high-colored, and last night she suffered from severe pain in the back, so much as to prevent sleep. Her pulse is uniformly high and weak. Her appetite latterly not good. Bowels costive after the free action of purgative. Her dose of acetate of potash has been increased to-day from grs. xv. to grs. xx. and a purgative ordered, consisting of Pulv. Jal. Co. ℈ii. with Podoph. gr. ss.

December 1*st.*—Discharge of urine little affected by the acetate. Ordered, Bitart. Pot. ℥ss., Extr. Tarax. ℈i. in Inf. Cherettæ, ℥ii. *ter.* She passed an easier night, less pain and more sleep. A quasi menstrual discharge came on a few days ago. The third within a month. It is very light-colored now.

11*th.*—The patient continuing to suffer much, especially at night from dyspnœa and other consequences of enormous distension, it was determined to perform paracentesis. She weighed 307½ lbs, an increase of 2½. lbs in weight and two inches in circumference having taken place since 23rd ult. On the 9th therefore a large trocar was introduced into an *ovarian* cyst, and 66½ lbs. of rather dense fluid, highly albuminous, flowed out in about two hours. When it ceased to flow the canula was withdrawn. No bad symptom of any kind has since occurred, and the patient is much relieved. The kidneys are acting with much more freedom than before the operation. She has taken opiates at night ; and wine four measures daily.

13*th.*—Has continued well since last report.

14*th.*—Discharged.

20*th.*—Weighed 253¾ lbs., goes about, and is doing well.

Present state.—Is very tall and obese, apart from the enormous size of the tumour which has increased so rapidly as to cause extreme distension of the abdomen. The integument is marked by white streaks, similar to those observed in pregnancy, and is mottled of a dusky purple color, which is most marked in the hypogastric region, where the dilated veins are seen coursing over the thickened integument in elevated ridges. The circumferential measurement of the abdomen four inches below the umbilicus is 62 inches, and the vertical, from ensiform cartilage to umbilicus, 16¾, and thence to pubes 18½ inches. Her weight is now 317 lbs., having increased 13 lbs. in six days. Appetite and general health are tolerably good, but the gums are rather soft, spongy and swelled; urine rather high-colored and turbid, but not albuminous; complains of considerable distress caused by her enormous size and weight, and of dyspnœa on attempting to be recumbent, which is daily increasing and disturbing her rest. There is pain in the right side of the abdomen extending upwards to the fundus of the tumour; fluctuation is every where distinct and no solid portion can be made out by palpitation or percussion; owing to the great distension of the parietes the probable extent of adhesions cannot be ascertained. The period having ceased yesterday, the operation for extirpating the ovary was fixed for the 18th, and the patient was to be prepared accordingly.

Operation.—February 18th, a moderately sized empty ward having been previously prepared, the patient was placed in an almost upright sitting posture, near the end of an operating table with her legs over the edge, the feet being supported by bandages.

Present, Drs. G. Smith, Paul, Chipperfield, vanSomeren, King, and other medical friends.

As soon as the patient had been brought under the influence of chloroform, which was very cautiously administered by Dr. Chipperfield, I made an incision four or five inches in length in the median line, commencing about two inches below the umbilicus, a layer of fat fully an inch and a half in thickness was cut through before exposing the abdominal muscles, which I was then proceeding to divide in layers, very cautiously on a director, when the tendon and cyst suddenly gave way near the centre of the incision, and the contents spouted forth in a large stream of semi-opaque gummy albuminous fluid into my face. Wells' large, ovarian trocar was immediately thrust into the opening, and while the cyst was being emptied, a long flannel binder which had previously encircled the abdomen was gradually tightened. On cleansing the wound after the contents of the cyst were evacuated, it was found that the close adhesion of the latter to the parietes had prevented the peritoneal cavity from being opened, and that the

adhesions were pretty extensive for some distance around; but the cyst being apparently free posteriorly, it was deemed expedient to continue the operation. After endeavouring vainly to separate the cyst wall from the peritoneum and thus get access to the cavity of the latter, the line of incision was extended downwards a couple of inches, and the peritoneum was then exposed. The hand being passed in around the cyst, the adhesions were discovered to be so formidable as to raise a question as to the propriety of proceeding further with the operation, but after consulting with Drs. Paul, Smith and Chipperfield, to whom I am much indebted for co-operation and assistance throughout, I determined with their concurrence to continue. On drawing out the cyst with a strong vulsellum, the adhesions were separated as far as possible with the hand and handle of a scalpel, and where they were too firm or contained blood vessels of any size, the cautery was employed, the parts being protected by Brown's cautery clamp. It then became necessary to extend the incision upwards a couple of inches or so, above and to the left of the umbilicus, in consequence of the extent and firmness of the adhesions in that direction. The cyst was also intimately connected with the omentum in several places and with the parietes close to the pelvis on the left side. Some of these had also to be separated by the cautery before the cyst was turned out. One or two vessels in the omentum gave some trouble and had ultimately to be secured by fine silver wire, the ligatures being cut off short. The pedicle was of moderate size, not very long, but the vessels traversing it were unusually large; it was secured in two separate portions by silver wire and by a third silver ligature around the whole behind the former; and dropped into the pelvis. A considerable quantity of blood was unavoidably lost as the vessels bled freely, and the operation was not completed in less than two hours. All the blood was removed by sponges and flannels from the abdomen and pelvis, and care had been taken to prevent any of the contents of the cyst from entering the cavity of the peritoneum. The wound was closed by seven deep and six superficial wire sutures, avoiding the edge of the peritoneum, and dressed with strips of plaster and pads of lint, the whole being secured, and the abdomen supported by a many-tailed flannel bandage.

The contents of the cyst, including what was estimated to have been lost, weighed about 90lbs. and the cyst 6 lbs. For the size of the cyst its wall was extremely thin.

After-treatment.—After the operation the pulse was 90 and weak, but on the whole the patient had borne the chloroform and the long operation very well, and there had been no vomiting. A little brandy had been given once or twice, and it was now repeated with the addition of Liq. Opii sed. ♏ xxx. An hour later pulse had risen to 128, there was some tendency to restlessness and pain was complained of in the right side. A hypodermic injection of mor-

phia gr. $\frac{1}{4}$ relieved both the pain and the restlessness, and she was calm for the remainder of the day. Milk and iced brandy were given at short intervals, but she vomited after taking some of the latter at 3 P. M. and refused any more. About $1\frac{1}{2}$ pints of milk were retained. At 5 P. M. surface was rather warm, temperature 100·8°, pulse 124, small, respiration 36. At 7 P. M. she was asleep.

February 19*th*, 5 A. M., had passed an indifferent night; the pain and restlessness returning, the hypodermic injection of morphia was repeated at 9 P. M. and at 3 A. M., also an opiate draught at 11 P. M. Respiration has become more and more hurried, and before the last hypodermic injection was administered, uneasiness in the chest and dyspnœa were complained of. Pulse 132, small and feeble, respiration 46, upper extremities becoming cold and covered with moisture, temperature in axilla 99°, not much tenderness of the abdomen on pressure; urine scanty. Has taken but little nourishment through the night, and still refuses to take but very little.

Ordered champagne every half hour, and a mixture containing Aromatic Spirits of Ammonia, Ether, Sp. Chloroformi and Camphor mixture.

At 6 P. M. she was sleeping, respiration 43. At 7 A. M. her condition was much the same, but shortly afterwards it became evident that she was rapidly sinking. Extremities became colder, respiration more hurried, restlessness increased, and pulse more and more feeble and rapid. At 9 A. M. it was quite imperceptible at the wrist, and at 9-30 A. M. she expired, 22 hours after the completion of the operation.

Autopsy.—Partial adhesion of the wound had already taken place throughout its entire length. The peritoneal cavity contained about 2 lbs. of dark brown turbid serum, but no coagulum of any size or sign of bleeding was found. Some lymph was effused in small quantities, uniting the omentum and viscera to the parietes on a level with the umbilicus and the whole of the parietal peritoneum, from midway below the umbilicus and pubes upwards nearly to the sternum, was deeply injected and of a dirty dark brownish color. The intestines were normal, and there was also no trace of inflammation in the pelvis. The wire ligatures around the pedicle were somewhat loose, and there was no sign of inflammation around them. The left ovary was healthy; on it two Graefian follicles were found recently ruptured and congested, and others were in various stages of maturation. At the desire of the husband the abdomen only was permitted to be examined; this was unfortunate as, the symptoms indicating thrombosis, it was very desirable to ascertain the condition of the heart and great vessels.

Monocystic proliferous Ovarian Cyst; Ovariotomy; Recovery.

Ponnee, aged 45, married 30 years, the mother of 7 children, the youngest being seven years of age, an emaciated, ill-fed native woman, was admitted into the Lying in-Hospital, on 1st December 1869, complaining of much distress from a very large abdominal tumour which, on examination, was found to be a simple ovarian cyst.

History.—The origin and course of the disease are not clear; information of this kind, when required for a time more distant than two or three months, being very difficult to obtain from natives of India and quite unreliable. The woman states that the catamenia ceased five years since, that for some time afterwards she had pain in the right iliac region, but she did not observe any enlargement or tumour on either side of the abdomen. About ten months since she became aware that the abdomen was increasing in size, and suspected it was due to some disease; but not before this period, though the mother states that the enlargement began as long as five years ago.

Present State.—The tumour now reaches to the ensiform cartilage, fluctuation is distinct at every point, and the parietes are evidently very thin. The woman is extremely emaciated and feeble, suffers from dyspnæa and disturbed sleep, but is still able to lie recumbent. The following measurements were taken: circumference at the umbilicus and below it 41¾ inches; between ensiform cartilage and umbilicus, 11½ inches; and thence to pubes ten inches. Weight 127 lbs.

The woman being in such indifferent health, and the sanitary condition of the hospital being then unfavorable for an operation of any kind, she was ordered tonics and a liberal diet, and kept under observation. After a month's residence in hospital, her general health had much improved, but the dyspnœa and restlessness had increased so much, that she implored the operation for her relief might not be longer delayed; it was therefore fixed for the 30th December.

Operation.—Present, Dr. George Smith, Dr. H. King, and Native Surgeon Iyasawmy, who was good enough to undertake the administration of chloroform to the patient. A short incision was first made below the umbilicus and the abdominal parietes carefully dissected until the sac was reached; there being however complete union between it and the parietes, it was impossible to say whether the conjoint tendon had been divided or not until the director passed into the cyst and the contents began to ooze out. The contents were then drawn off by means of Spencer Wells' large ovarian trocar and canula, and the incision extended downwards and upwards to the extent of about seven inches. The adhesions

were very extensive in front, reaching from four inches below the umbilicus to the uppermost part of the cyst, and outwards about four inches on either side of the incision. They were not very vascular, and nearly all were separated by the hand and handle of the scalpel; at one spot the actual cautery was employed on account of the size of the vessels. The omentum was also adherent to the cyst in a few places, and there was one small adhesion between the latter and the intestine. The pelvis was free, and the only adhesion near to it was to the abdominal parietes on the left side. On turning out the empty sac, which was done without any of the contents escaping into the peritoneal cavity, the pedicle was found to be only of moderate size and rather short, attached to the right broad ligament, and the right Fallopian tube was seen passing up over the base of the tumour posteriorly. The pedicle was secured in two portions with fine twine and divided, and the ends of the ligature being cut off short it was dropped into the pelvis. The abdomen was then carefully sponged out, and the incision closed by seven deep and six superficial wire sutures. The wound was then dressed with carbolic paste &c., and a many-tailed flannel bandage applied over all.

The fluid contents of the cyst weighed 40 lbs. and the sac itself 2½ lbs, including a few small cysts at the base. The fluid was very dense, oleaginous in appearance and variegated with yellowish streaks, which proved to be due to the presence of cholesetrine in large quantity. Very few oil particles were seen on microscopical examination.

The operation lasted about an hour and a half, and the patient had become almost collapsed, pulse hardly perceptible, surface cold and covered with moisture. Brandy had already been given, and it was now repeated with Tr. Opii. ℥ ss and the former directed to be continued at frequent intervals with as much milk as she cared to take. At 2 P. M. the temperature began to return, but she rallied very slowly. Restlessness was kept in check by the exhibition of opium grs., every second hour. Up to 6 P. M. she had vomited only twice, and the temperature was still low; a hypodermic injection of Morphia gr. ⅙ and a diffusible stimulant were ordered.

December 31*st.*—Vomited three or four times during the night, but had obtained some sleep at intervals; the hypodermic injection was repeated at 3 A. M., after which she remained perfectly quiet for a couple of hours. Breathing now natural, pulse, 120, temperature 99°. Complains of thirst, but there is neither pain nor tympany, taking milk freely, but refuses the brandy.

Creasoti, ♏ ii. in pill every third hour.

Potassæ Chloratis, ℥ i. Aquæ ℥ i.

for drink, with Acid Hydrocyan. dil. ♏ ii. occasionally if vomiting continues.

Vespere.—Vomited only once. Pulse the same.

Quinæ Disulph. gr. i. Opii gr. i. every third hour.

Omit Creasote pills.

Jany. 1st.—Temperature began to fall at 1 A. M., now 98·4°.

Pulse 94; still thirsty.

Deep sutures cut but not removed.

2nd.—Going on favorably; pulse 92, temperature 98·6°.

Deep sutures removed, wound looking well. No tympany or tenderness. Omit Opium.

Cont. Quinine.

3rd.—Temperature increased somewhat last evening and one minim of Tincture of Aconite has been given every hour when awake through the night; temperature 99°; pulse 100.

Cont. Aconite and Quinine.

4th.—Temperature 98°; pulse 84, wound seems quite united, hardly a drop of pus.

Cont. Quinine. Omit Aconite.

5th.—Superficial sutures removed.

Bowels acted spontaneously yesterday.

6th.—Temperature 97°; pulse 82.

7th.—Pulse 76.

9th.—A slight discharge of pus from the upper part of the wound; epidermis peeling off about ½ an inch from the edge in one or two places. Pulse the same.

Cont. Quinine. 3 oz. of brandy.

31st.— Got up on the 15th day, and has made a perfect recovery. On the 18th January weighed 87 lbs.

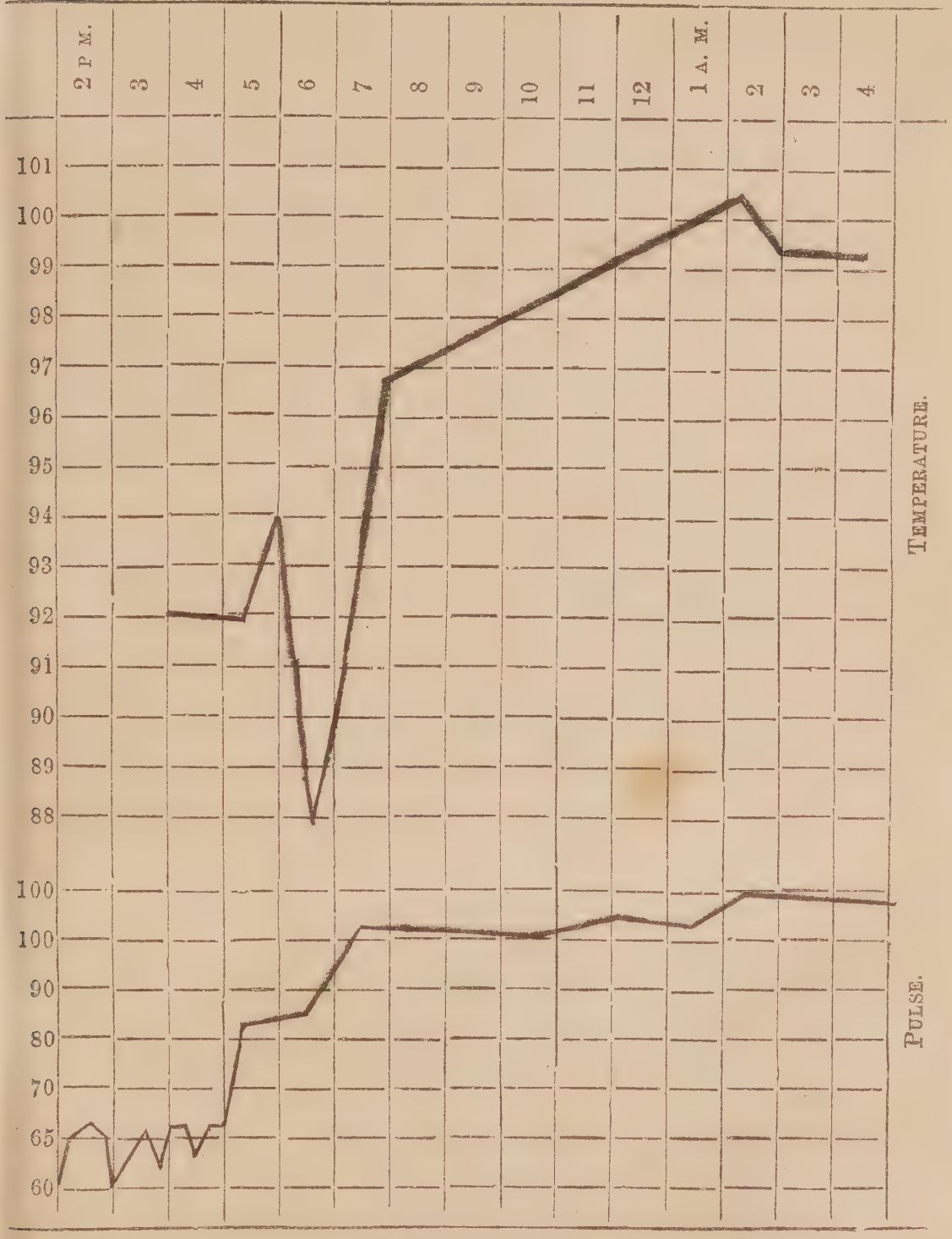
Remarks.—In my first case of ovariotomy published in the 10th volume of the *Madras Quarterly Journal of Medical Science*, page 169, the pedicle was tied with whip cord, and the ends being cut off short, it was dropped into the pelvis. The woman, an East Indian, made a rapid recovery. The second case, now given, is interesting from the enormous weight of the woman and size of the cyst being, I believe, unparalleled. It shows that the age, strength and degree of health of the patient, at the time of operating, are not, *per se*, sufficient grounds on which to assume a favorable prognosis, and that the extent and firmness of the adhesions and the constitutional tendency of the patient are far more important elements to be considered in that respect. Fat persons form as a rule bad subjects for operation of any kind, and the risk incurred seems to be increased proportionately to the magnitude of the operative procedure. I remember a very stout middle aged gentleman on whom I operated for fistula a few years since. He was in rude health and used to considerable exertion in the Racket Court, almost daily, at the time, and being accustomed to a liberal

dietary, he growled at the necessary restriction which was placed upon his allowance of food. After only three days in bed, he got up feeling perfectly well, until attempting to walk he found his strength had fled in that short time, and I was obliged to support him across the room to prevent him from falling.

The third case is one of those which tend to disprove the correctness of all the accepted data on which a favorable or an unfavorable prognosis is usually made. Half-starved, emaciated to an extreme degree, with the vital powers almost at the lowest point, and adhesions so extensive, a case of encysted dropsy more deserving of an unfavorable prognosis, to all outward appearance, can hardly be imagined, than this one. She was very long in rallying from the shock of the operation, and there was only just sufficient vital power remaining to unite the incision by first intention. Adhesion between the injured peritoneum and the abdominal parietes seems to have taken place without the intervention of any of the signs of inflammation. There has been no abdominal tenderness or tympany, and the temperature rose only to 99° in two days. Had the extent of the adhesions been distinctly traced during the filling of the sac, which would have been quite impossible on account of the thickness of the deposit of fat on the abdominal parietes, it is questionable whether it would have been right to withhold the chance of recovery in such a case, considering how short a time the vital powers would probably withstand the enormous loss of at least 60 to 70 pounds of albuminous fluid every two or three months; the rate of secretion, under the greatest pressure from distension that could be borne, being 2 lbs. daily : although an operator for his own credit's sake, or for that of the operation, may have preferred to reject a case that presented so many unfavorable points.

In all three cases the pedicle was secured with whip-cord, silver wire or twine, and returned into the pelvic cavity, and in the two that recovered not a symptom occurred to indicate the presence of any irritation from this source.

DIAGRAM *of rise and fall of Temperature and Pulse, in a Case of Snke-bite, from* 2 P. M. *8th January, till* 4 A. M. *of 9th January* 1870. By B. B. ALLAN, Assistant Apothecary, on duty General Hospital.*



* Vide page 237.

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Building Advances.

The system of making State advances of money to Officers of the Army for the purpose of enabling them to purchase for their personal residence in Military Cantonments, not having been found in practice to work well or to the public advantage, the Right Hon'ble the Governor General in Council is pleased, in modification of General Order by His Excellency in Council No. 985* of 15th October 1867, to restrict the issue of advances to those cases where Officers, on the formation of new Cantonments, or when suitable accommodation is not obtainable in existing Military Stations at reasonable rents, desire to erect houses for their own accommodation.

* Madras G. O. G. 1st November 1867, No. 460.

In all other respects the General Order above mentioned remains unaltered.—(G. O. G. G. No. 21 of 1869.)

Applications for Furlough—No-Demand Certificates—Statements of Service.

G. O. G. No. 29 of 26th January 1869.—The following extracts from General Orders by the Government of India are republished :—

Fort William, the 11th January 1869.

With the view of preventing the inconvenience which frequently results from the irregular manner in which applications for furlough to Europe from Officers serving under the several Local Governments and Administrations are submitted for the sanction of the Government of India, and from their being unaccompanied by the statements of service and certificates required by the regulations, the following rules are published for the guidance of all concerned.

2. The Local Government or Administration, or Department, under which the Officer is serving, will forward

the application in duplicate for furlough to Europe on private affairs to the Adjutant General for submission to the Government of India in the Military Department, and on sanction being accorded, an intimation to that effect, or an extract General Order, will be sent by the Military Department to the Local Government or Government Department, which will then grant the usual preparatory leave to the port of embarkation. Officers serving out of their own Presidencies will submit their applications for furlough on private affairs to the Government of their own Presidency through the Government or Administration under which they may be serving.

3. Officers are recommened not to defer submitting their applications to the last moment, as they are on no account to be permitted to leave their stations until they have been officially informed that the furlough has been sanctioned.

4. Care is to be taken that applications are accompanied by the prescribed documents, in duplicate, as specified below :—

1. A certificate of no-demands from the Presidency Paymaster, countersigned by the Military Accountant, or by a guarantee from some respectable person or agent. Officers should, as early as possible, apply to the Presidency Paymaster for the necessary "no-demand" certificate, countersigned by the proper authorities, at the same time furnishing that Officer with a similar certificate from the Paymaster by whom they were last paid, without which the Presidency Paymaster cannot grant his no-demand certificate.

The following is the form of guarantee required in lieu of a no-demand certificate :—

To the Secretary to the Government of India,
Military Department.

Sir,—In lieu of the prescribed no-demand certificate, I (or we) hold myself (or ourselves) responsible to the Government for any public demand or demands that may arise against (name and corps) in the event of his being permitted to proceed to (place of leave or furlough.)

I (or we) have, &c.

Signature.

Place and
Date.

In the case of an Officer serving in the Public Works Department, the no-demand certificate will be furnished by the Public Works Controller of Accounts of the province in which he may be serving.—G. G. O. No. 891, dated 24th October 1866.

In addition to the no-demand certificate, an Officer in Civil or Political employ must produce an acquittance from the Civil Branch of the Office of Account of the Presidency or Local Government under which he may be serving, or to which he may be responsible.

II. A statement of leave since entering the service—and statements of service—in the subjoined forms, A. B. C. D. (to be prepared by the applicant himself.) [Vide M. Q. J., N. S. p. 522.]

* * * * *

III. A declaration on honor, in the case of Officers proceeding to England on urgent private affairs, and who are not entitled to regular furlough as required by para. 3,* Section XXXVI of the Military Regulations.

5. As regards Officers proceeding to England on account of ill-health, the existing rules remain unaltered.

6. Preparatory leave in the case of Officers proceeding on medical certificate will be granted, as hitherto, by Local Governments and Administrations in anticipation of the applicant appearing before the Medical Board of the Presidency at which he may embark, and in the case of Officers proceeding by Bombay or Madras, furlough on medical certificate will be granted by the Governments of those Presidencies in the local Gazette, subject to confirmation by the Government of India.

7. Officers proceeding *via* Calcutta are required to submit their applications to the Assistant Adjutant General, Presidency Division, for submission to the Military Department at Calcutta.

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* *Para.* 3, *Section XXXVI of the Military Regulations.*

An Officer desirous of proceeding to Europe on emergent private affairs, who may have already enjoyed the authorized furlough, or who * * * * is not entitled to such indulgence, will transmit with his application a succinct detail on honor of the circumstances which induce him to apply.

8. The following papers must be submitted with these applications, viz:—

Certificate of the Presidency* Medical Board.

Statement of service as above.

Certificate required of Officers in charge of cash or stores by G. G. O. No. 755 of 1860 in accordance with the form below :—

"Certified that as far as can be ascertained, after careful examination, nothing irregular or any known demands against _____

_____

_____

_____

remain unadjusted in his office."

_____

_____

_____

Place. *Signature of the Relieving Officer.*
Date.

* Or Board presided over by an Inspector General of Hospitals Indian Medical Service.

Inspectors and Deputy Inspectors General of Hospitals—Extra Pension.

The following Military letter from the Right Hon'ble the Secretary of State for India, No. 433 dated 8th December 1868, is published for general information :—

MILITARY. INDIA OFFICE;
No. 433. LONDON, 28TH OCTOBER 1868.

To His Excellency the Right Hon'ble the Governor General of India in Council.

SIR,—I have considered in Council your letter dated the 24th of October last, No. 413, submitting the question whether service for the extra pension of £350 in the case of Inspectors General of Hospitals, or £250 in that of Deputy In-

spectors General, should commence from the date of the Officer's appointment to that grade, or from the date of his taking up the duties of the appointment.

2. With the view of rendering the periods regulating the tenure of office and the claim to extra pension identical, you recommend that the service should be held as commencing from the date of appointment, if the Officer be in India, or, if otherwise, from the date of his arrival in India; and that the full consolidated pay of the appointment should commence, for an Inspector General, from the date of his entering the Presidency, if he be not already within it, and for a Deputy Inspector General, from the date of his entering the circle.

3. Her Majesty's Government approve of these recommendations being adopted as a general rule; but it is not their intention thereby to alter the decision laid down in my Despatch dated the 24th of May 1867, No. 144, which limited the tenure of office, in the case of an Inspector or Deputy Inspector General who has been officiating as such on full pay prior to his permanent appointment, to five years from the date of the commencement of such officiating service. In this case, the five years qualifying for extra pension should commence at the same time.

I have, &c.

STAFFORD H. NORTHCOTE.

—(G. O. G. G. No. 51 of 1869.)

Medical Officers—First Appointment Pay.

The following Military letter from the Right Hon'ble the Secretary of State for India, No. 437, dated 8th December 1868, is published for general information :—

MILITARY. INDIA OFFICE;

No. 437. LONDON, 8th DECEMBER 1868.

To His Excellency the Right Hon'ble the Governor General of India in Council.

SIR,—I have received and considered in Council your Excellency's letter No. 419 of the 31st October 1868.

2. I still am of opinion that Officers of the Indian Medical Service, on first appointment, should only come into re-

ceipt of Indian pay and allowances from date of arrival within the limits of the Presidency to which they have been gazetted, but whenever they may be provided with passages on board Her Majesty's Indian troopships, they will be considered as entitled to Indian pay and allowances on landing at Bombay.

I have, &c.

STAFFORD H. NORTHCOTE.

—(G. O. G. G. No. 52 of 1869.)

(General Orders by the Commander-in-Chief.)

Native Languages—Leave.

G. O. C. C. No. 92 of 17th July 1869.—With the sanction of Government the following General Orders by His Excellency the Commander-in-Chief in India are republished :—

Adjutant General's Office, Head Quarters Simla,

20th May 1869.

No. 135.

The following Notification by the Government of India in the Financial Department is republished :—

No. 36, dated 17th April 1869.—The following letter to the address of the Secretary to the Government of the North-Western Provinces is published for general information :—

" I am directed to acknowledge the receipt of your letter No. 53-A. of 22nd January 1869, and in reply to state that Military Officers in civil employ may be allowed leave to attend examinations in the Oriental languages to the extent to which such leave can be granted to Covenanted Civil Servants under the Resolution No. 2749, dated the 24th September 1867. Such Officers cannot be granted leave under the General Order of the Military Department, No. 1008* dated 3rd December 1866."

(* Madras G. O. G. No. 482 of 1866, Page 241.)

Higher Standard—Hindustani Examination.

G. O. C. C. No. 94 of 20th July 1869.—The following General Order by Government is republished for information :—

The Right Honorable the Governor in Council under the authority of the Government of India, is pleased to establish the following superior tests for the higher standard examination in Hindustani of Officers of the Madras Presidency, in lieu of those laid down in G. O. G. G. No. 734,* dated 9th September 1864, and in supersession of the Madras General Orders marginally noted.

By Govt. No. 126, dated 27th March 1866.
Do. ,, 228, ,, 12th June 1866.
Do. ,, 159, ,, 12th April 1867.

I. The object of the higher standard is to ensure that Officers passing it shall have acquired such a knowledge of the Hindustani language as shall qualify them, so far as that language is concerned, for general employment on the Staff, and admission to the Staff Corps.

II. To this end, candidates will be tested as to their ability

First—To read and construe passages in books of ordinary difficulty in Urdu ;

Secondly.—To make accurate and idiomatic written translations from English into Hindustani ;

Thirdly—To read and translate written petitions, native letters, &c.;

Fourthly—To translate *vivâ voce*, Proceedings of Native General, District or Regimental Courts Martial ;

Fifthly—To converse with two Natives of India, Mussulman and Hindoo.

TESTS.

First.—Reading fluently, and constructing with readiness and accuracy, not less than half an ordinary page of the *Bagh-o-Bahar.*

Second.—Translating accurately, and with correctness of idiom and grammar, not less than half an ordinary page of plain English into the Hindustani language.

Third.—Translating from English into Hindustani a paper of short sentences, the greater part on professional subjects, to be rendered accurately and idiomatically.

Fourth.—Reading fairly and translating readily and correctly Hindustani manuscripts.

Fifth.—Translating *vivâ voce* into Hindustani, Proceedings of a Court Martial, a duty that will frequently be required of the candidate. The Examiners will read out the different parts of the evidence for translation by the candidate to the Natives in attendance on the Examiners—who will satisfy themselves that the Officer's interpretation is clearly and correctly understood. In translating

the Charge, Finding and Sentence, the candidate is to be allowed the use of the Record.

Sixth.—Conversing with Natives with fluency and with such correctness of pronunciation, grammar and idiom, as to be at once intelligible, and, in like manner, to understand readily all that the Natives say.

This Order will take effect from the 20th October 1869 inclusive.—(No. 233 of 29th June 1869.)

* Madras G. O. G. No. 383, dated 27th September 1864.

Travelling Expenses—Passages—Railways.

G. O. C. C. No. 97 of 21st July 1869.—The following General Orders by His Excellency the Commander-in-Chief in India are republished :—

Adjutant General's Office, Head Quarters Simla,
31*st May* 1869.

No. 154.

Government* has been pleased to rule that in cases of Officers proceeding on an ordinary tour of inspection, for which they are entitled to receive mileage allowance, the allowance will be passed, and a passage warrant for a charger granted in addition, when the Officer is entitled to take a charger, for such portions of the journey as may have to be travelled by railway.

* (Vide Order of Government, No. 1239 of 1869.)

Reports—Arrival—Departure.

G. O. C. C. No. 99 of 2nd August 1869.—It having been brought to notice that many Officers of the Madras Army fail to report their "Arrivals" and "Departures" in the Books kept in the Brigade Offices of Calcutta and Bombay for that purpose, thus causing frequent reference and much inconvenience to the Public Service—the Commander-in-Chief directs the particular attention of the Officers of this Army to para. 837, as also to paras 305 to 309 inclusive, of the Madras Army Regulations of 1869.

Furlough Regulations—Applications for Leave.

G. O. C. C. No. 107 of 13th August 1869.—The instructions laid down in the 1st Clause of Rule XXXIV of the Furlough Regulations of 1868 being generally neglected on occasions of Officers

of this Army proceeding on leave—the Commander-in-Chief hereby directs it to be notified for general information that for the future applications for leave of any description received at Army Head Quarters will not be attended to, unless an election of Furlough Rules is specified.

Leave—Medical Department.

G. O. C. C. No. 111 of 18th August 1869.—The following General Orders by His Excellency the Commander-in-Chief in India are republished :—

Adjutant General's Office, Head Quarters Simla,
5th July 1869.

No. 195.

The following Notification by the Government of India in the Financial Department* is republished :—

No. 1226, dated the 17th June 1869.

* * *

Resolution.—In accordance with the opinion expressed in the Military Department, the Governor General in Council is pleased to resolve that in cases in which the furlough allowance of a Medical Officer in civil employ, calculated according to Rule V of the Military Leave Rules on the average salary drawn by him for three years prior to his proceeding on furlough, does not equal half of his unemployed pay, the difference shall be added to the furlough allowance.

* M. G. O. No. 2615 of 15th July 1869.

Army Regulations.

G. O. C. C. No. 113 of 19th August 1869.—The Commander-in-Chief directs the following addition and alteration to be made to paras. 314 and 936 Army Regulations—Books to be corrected accordingly.

Para. 936, after the last word "health" add—

Applications before being forwarded to the Adjutant-General, must receive the recommendation and signature of the Deputy Inspector General of the Circle and of the Inspector General, as well as of the Military Authorities of the Division, District or Brigade.

Barrack Furniture.

G. O. C. C. No. 114 of 19th August 1869.—With reference to G. O. G. 232 dated 19th June, and No. 382 dated 6th October 1868, it is notified that the Government of India has sanctioned the following Articles of Furniture being issued to Medical Subordinates of all grades occupying public quarters.

Boxes, Kit, with Padlock and Key....	1 per unmarried Medical Subordinate. 2 per married do.
Chairs, Barrack.....	2 per Medical Subordinate, single or married.
Cots, Barrack pattern.....	1 per unmarried Medical Subordinate. 2 per married do.
Table, small, 5 × 2 feet 10 inch...	1 per Medical Subordinate, single or married.

Hospital Inspections—Medical Boards.

G. O. C. C. No. 115 of 20th August 1869.—The Commander-in-Chief directs that Clauses I and II of G. O. C. C. No. 80, dated 3rd July 1867, page 145, and G. O. C. C. No. 141, dated 29th October 1868, page 273, shall be cancelled, and that the following be substituted for Clauses I and II G. O. C. C. No. 80, dated 3rd July 1867—Order Books to be corrected accordingly.

I. Administrative Medical Officers of Circles will inspect the Barracks and Hospitals in their respective circles once a year only, the Inspection Report (W. O. Form No. 824*) will be completed and sent so the Inspector General H. M. British Service in duplicate.

II. They will at the same time preside over the Invaliding Boards which will assemble under the orders of Officers Commanding Divisions and Forces. The proceedings of these Boards are to be considered final.

* Will be furnished from the Adjutant General's Office.

Horses—Veterinary Department.

Adjutant General's Office, Head Quarters Simla,
19th July 1869.

No. 207.

With the view of establishing a uniform system of shoeing, the Commander-in-Chief is pleased to lay down the following general

directions on the subject for guidance, and His Excellency desires that Officers Commanding Regiments of British Cavalry and Brigades of Royal Artillery, will give their support and assistance to Veterinary Surgeons, who will be held personally responsible that the instructions now promulgated are carried out.

I. All unnecessary interference with a sound healthy foot is to be avoided. The foot, being quite free from any defects, it is only necessary to remove the old shoe, rasp an even bed for the new one; this fitted, nailed on, ends of nails twisted off, and the clenches battened down, no further use of the knife or rasp is required. But when the horn is cracked, exfoliating or diseased, a free use of both knife and rasp is to be had recourse to : its absolute avoidance in these cases being as great an evil as its free use in cases of perfectly sound feet.—By the Queen's Regulations six nails are the minimum; but in India, owing to the feet of the horses being generally smaller and the soil much lighter and drier, five, and in some cases four nails have been found an ample number to keep the shoe from shifting. No more nails are therefore to be used than are actually required to ensure the retention of the shoe in its place, and it will rest with Veterinary Surgeons to determine the number required in each case.

II. The shoe being once fitted to the foot and nailed on, no further cutting or rasping of the foot should be allowed, the practice of cutting horn from under, or rasping away clenches is forbidden.

The score of the rasp should never be visible on the crust.

The weight of the shoe to be regulated by the size of the foot.

III. Spreading flat feet, inclined to convexity, should be protected by broad light shoes, which should be removed only when about to fall off, these feet should never be touched by the knife, and only very sparingly with the rasp. In cases of actual convexity of the sole, a hot iron, passed freely and frequently over it will be followed by good results.

When there is a tendency to contraction, the knife should be frequently used, and with liberality ; the thick horn about the heels should be removed with knife and rasp, till the heels bend under pressure of the hand. When the feet are much contracted, tips only should be worn, and these should be removed, and the foot unsparingly thinned once a fortnight.

Veterinary Surgeons will exercise their own judgment as to the proper mode of shoeing to be used in exceptional cases.

CORRESPONDENCE.

TO THE EDITOR OF THE MADRAS MEDICAL JOURNAL.

SIR,—An editorial and correspondence appeared some time ago in the *Madras Times,* commenting severely on the barbarous injustice our local University had been guilty of, in unwarrantably excluding certain of her medical undergraduates from the privilege of presenting themselves for the M. D. degree. The case of these students is very plainly stated in the Editorial alluded to, and their grievance is evidently one loudly calling for redress. On enquiry, I have ascertained that these young gentlemen, adopting the only course open to them, petitioned the Syndicate of the University to exclude them from the operation of the new rule which required them to graduate in Arts before proceeding to the M. D. The Syndicate did not even deign to reply to the Memorial, but I have been told by reliable authority that it was " decidedly rejected."

This conduct of the University is, undoubtedly, pathognomonic of the existence within the economy of the medical Faculty of some putrefactive process, and it but confirms the diagnosis given by you in the leading article of your last issue—" *We are satisfied that the Medical Faculty of the Madras University is not in a sound or healthy condition.*"

Your's obediently,

MEDICUS.

TO THE EDITOR OF THE MADRAS MEDICAL JOURNAL.

SIR,—May I beg of you to spare me a corner for the following case, if you deem it deserving of publication in your valuable periodical.

There was a girl about a year old, suffering from Congenital Syphilis, marked by discharge from her nostrils, with sores on the alæ and floor of the nose, on the chin, angles of the mouth and genitals, and around the anus.

It appears that her mother, during her period of gestation, was subject to a bad form of Primary Syphilis, from the effects of which she died a few months after confinement, when the duty of nursing the child devolved upon a near relative of hers, who is reported to have been quite healthy and strong, and her husband equally so. This woman a short time after had some excoriations on her left nipple, and a condyloma about the size of a quarter-rupee piece a few inches below it. Her child, a little boy of three years of age, who was nursed by her at the time, became infected with Syphilis, and was suffering with sores on both angles of the mouth and on the prepuce. The woman positively denied her ever having had an

attack of Syphilis, and stated her firm conviction that the infection was derived from the girl she nursed.

Now, what I wish to be informed about, is whether the boy derived the Syphilis from the milk of the mother, or from the excoriations on her nipple ?

Yours obediently,

COOPOOSAWMY,

1st Class Hospital Assistant.

TO CORRESPONDENTS.

Dr. F.—*The obnoxious ruling does not affect furlough pay. A medical officer over five years' service will receive £300 a year if in charge of a regiment when he takes furlough.*

T. STREENEEVASOOLOO.—*The carbolic acid supplied in this country is the same as that which is solid at ordinary temperatures at home. Here also it is often seen solid. A drop of the liquid would probably be equivalent to a grain of the solid acid.*

N. S. MOOTOOSAWMY—*Received with thanks.*

DR. FARQUHAR. Do.

BOOKS, &c., RECEIVED.

Journal des Connaissances Médicales *(to 10th January.)*

FAYRES'S Ligature of the External Iliac.

MACNAMARA'S Treatise on Asiatic Cholera.

The Secretary Madras Branch of ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND *acknowledges with many thanks receipt of the following Donation and Subscription.* J. A. Reynolds, Esq., Rs. 100 ; Dr. A. Porter (1869-70), Rs. 10.

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No. V.—MAY, 1870.

ORIGINAL ESSAYS.

ART. XXIII.—*Cases of Snake Bite, &c.* By JOHN SHORTT, M.D., F.L.S., &c., Surgeon, Superintendent General of Vaccination, Madras.

AUTHENTICATED reports of snake bite are rare. From the nature of the accident cases seldom come under the care of medical men for treatment, and even in the few instances in which they are submitted, they arrive in the last stage probably, and very soon prove fatal, so that no proper record of the accident is made; the more so, when the prevaricating nature of the account given by natives generally is taken into consideration. Under these circumstances, it is necessary that every case of snake bite, treated successfully or unsuccessfully, should be recorded in full, as the subject has of late been attracting the attention of not only the profession, but of the public generally, and Ammonia has been relied on as the sole panacea in all such cases, with what result it is my object to show in this paper, as well as the evidence for and against it, and with what confidence it is, even by some medical men, believed to be an antidote for snake poison in such cases. For the following cases I am indebted to the kindness of the Rev. Mr. Chester, Medical Missionary of the Madura American Mission.

CASE I.—*Dindigul, October 16th*, 1867.—"A young lad of the Oottar caste (well-diggers), about 12 years of age, was brought to my dispensary to-day at 4-30 P. M. He had been digging for rats, and was bitten by a cobra on two fingers. The blood was still trickling from the places bitten. Nothing had been done for him, not even a ligature tied at the wrist. From all I could learn, he had been bitten three-quarters of an hour previous to his reaching the Dispensary. I at once applied a ligature, and freely cut away the parts of each finger where he had been bitten. He bled freely, but seemed to feel no pain. The eyes had a somewhat vacant look, and the eyelids were somewhat swollen. Commencing at 4-30 I gave Liquor Ammoniæ 30 minims, and brandy 3 drachms every 15 minutes, and required the friends to keep the boy walking briskly. At 5 o'clock the boy could with difficulty walk, and was blind or nearly so. At 5-15 he could not swallow, and in a few moments died. For some little time before the poor boy's death, the pupils of his eyes were very much dilated."*

For the following account I am indebted to the kindness of Dr. Oswald, Surgeon, Mysore Commission.

CASE II.—"A villager came to my tent yesterday with two small wounds in the second joint of his finger, caused, he said, by the bite of a cobra which struck him as he was gathering leaves from a bush. The wounds were bleeding a good deal, and had the appearance of a jagged tear, as from a thorn. The tree at which he was struck was less than a quarter of a mile from the tent, and, he said, he had come to me at once. At that time he was quite sensible and collected, merely complaining of a burning pain in his finger. I at once gave him half a glass of brandy with about 15 drops of Liquor Ammoniæ, and after washing the blood from his finger, applied Ammonia to it. For about ten minutes he seemed unaffected by the poison, except as far as the pain in his finger was concerned, and I then went to look after the snake, leaving the man in charge of a brother officer, who after a few minutes gave him some more brandy and Ammonia internally, and continued to apply the Ammonia to the wound; in another half an hour the man became dizzy and confused; in five

* This case was inserted in the local newspapers shortly after it occurred.

minutes more lost power of speech, and then rapidly became insensible. Within two hours after the time he came into the tent he was dead. I had the snake dug out, and shot it. It was a cobra about four feet long. Can you tell me what remedy I ought to have applied, and how? Also what to use instead of Liquor Ammoniæ as an antidote?"

Dr. Oswald, writing on the 3rd June 1869, says—"I enclose a letter received a few days ago from an officer, in case it may prove of interest to you. Do you think if Mr. C——— had amputated the finger as soon as he saw the man, and given the strong Ammonia in larger doses, say from forty to sixty minims, it would have saved his life? The poison had evidently not taken effect when the man first came to Mr. C———. But whether it had circulated or not, is another matter."

Dr. Oswald here relates the case of an officer bitten by a centipede, who suffered intolerable pain, and whose whole hand and arm became very cold; for which he gave him forty minims of the strong Liquor Ammoniæ, and repeated two smaller doses at intervals of twenty and thirty minutes. The first dose gave immediate and great relief, and the hand and arm became warm. In twenty or twenty-five minutes the pain returned but not so severely, and it required two more doses to relieve him entirely, when he fell asleep and was quite well the next morning. Dr. Oswald thinks "that if it required such large doses to counteract the venom of a centipede, how much must be required to counteract that of the cobra, if it does do so at all?" Both these cases of cobra bite are of considerable interest, although in the second case the dose of Ammonia was not sufficiently large, as pointed out by Dr. Oswald. As regards Ammonia being an antidote to snake poison, I shall notice the subject subsequently.

Case III.—For the following I am indebted to the kindness of Dr. Thomas, Resident Assistant Surgeon, General Hospital.

"Notes (from memory) of the woman bitten by a snake, (in the foot). Fatal result.

On the night of the 14th April 1869, about 1-30 A. M., a woman was brought to the hospital, said to have been bitten by a snake on the dorsum of the foot, at 10 P. M. The marks of the bite were visible, and a little blood was

exuding from the wound. A ligature had been applied above the ankle before she was brought. Her condition on my first seeing her was as follows:—She was perspiring profusely, and in great anxiety from fear of death. She complained of some pain in the bitten part. Liquor Ammoniæ fort. was rubbed into the wound, and a solution of ammonia and water was injected hypodermically, but *not* into a vein. The patient was kept walking about the verandah, supported between two men. Stimulants of brandy, ammonia, and water were freely administered, and a second injection of the solution of ammonia was tried about 3 A. M. The woman had frequently recurring attacks of convulsive movements of the whole body, and required the aid of several persons to hold her. These ceased about 4 A. M., when she fell asleep for about half an hour. On awakening her, she had no return of the convulsions, and lay quietly on the hospital verandah (there being no accommodation for females, she was not admitted), where she was seen by Dr. Paul, who judged from her appearance, that she had been bitten either by a rat or a harmless snake. She remained tolerably well, and at 9 o'clock her friends removed her in a common country cart, and I heard that she had a relapse and died in convulsions whilst in the cart. An inquest was held, and the coroner told me subsequently that he had no doubt in his own mind, but that the woman had been bitten by a poisonous snake, and died from the effects of the bite. According to the statement of her friends, the woman lived more than 11 hours after being bitten.

The returns of the patients shew that no cases of snake-bite were treated in the hospital during the years 1867, 1868 and 1869, and there appears to have been only four cases, including the above mentioned one, treated as out-patients. Of these, no records are kept; as the evidence, (1st) of the patient having been bitten by snake, (2nd) of the nature of the reptile, and (3rd) of the results of treatment are unreliable."

For the following interesting letter I am indebted to Dr. Charles Smith, late Deputy Inspector General of Hospitals, Pegu Division.

"31*st January* 1868.

"I see by the newspapers and Medical Journals that you are anxious to secure an antidote for the poison of snakes. The following remarks will probably interest you,

as you are apparently not aware that so far back as 1833 or 1834, I forget when, I published in one of the Calcutta Journals a case,—narrative of some experiments on dogs, that satisfied me that Liquor Ammoniæ, if given in sufficiently large and frequently repeated doses, is a perfect antidote to the snake poison.

"I was in medical charge of a Troop of H. A. at Bangalore, when a snake charmer was brought into hospital, who had been bitten about half an hour previously on the back of his hand by a large cobra. When admitted he was insensible, and had very much the appearance of a man under the influence of Opium. I at once placed a tourniquet on his arm, and thus cut off in a measure the further supply of poison from the wound to the system, applied Nitric Acid freely to the wound, and bled him in that arm with the view of removing any poison remaining in the limb. At the same time I gave him Liquor Ammoniæ in ℥ss. doses every ten or fifteen minutes, diluted with as small a quantity of water as enabled him to swallow it, cold douche to the head, and blister to the neck; and as his pulse was fast failing, I kept up artificial respiration for some time, by blowing into the mouth and nostrils, (I had seen this successfully tried in a case of poisoning by opium). After about four hours' hard work the man's life was safe.

"Shortly after this I tried the effect of Liquor Ammoniæ on dogs. Having procured some fresh cobras, I had the dogs held, and the mouth of a snake fairly applied to the bare part inside the thigh. The dog was then left till the poison took effect, when I administered the Liquor Ammoniæ, and, in every instance, saved the dog: while those to whom the antidote was not given died.

"I consider that Liquor Ammoniæ is a direct antidote, and does not act merely as a stimulant, as it is equally efficacious in cases of poisoning in the dissecting room.

"You can hardly I think have been in the service when a man who had been recently bitten was brought to Surgeon Lawder at the Black Town Dispensary. The man showed symptoms of poisoning when admitted. Mr. Lawder applied a tourniquet, and gave Liquor Ammoniæ freely, and in three or four hours the symptoms of poisoning passed away, but on loosening the tourniquet, they reappeared. The tourniquet was again tightened and the treatment resumed; but it was not till the third day that

it was found safe to remove the ligature. It had been previously frequently relaxed, and was always followed by a return of the symptoms of poison. The difficulty in snake-bites has always appeared to me that of the case not having been brought sufficiently soon under treatment, or the bite being in a spot which could not be insulated, as the lip, nose, or ear. My experience is, that death from snake-bite is not common. Eau de Luce (Spiritus Ammoniæ Succinatus) was looked upon as a specific, when I first arrived in India, and I have no doubt, deservedly. Croft's Drops, which I am told are a preparation of Ammonia, are looked upon as a specific at the Cape of Good Hope."

For the following letter, suggesting the trial of *Eau de Luce,* I am indebted to the kindness of Dr. J. D. Rendle.

"*February* 18*th*, 1868.

"I am physician to the Government Prison, Brixton, London. My object in writing to you, is to recommend trial of a remedy for the bite of the cobra, on which subject you have requested information in the pages of the *Lancet.*

"Whilst investigating the history and progress of Cholera about three years since, in anticipation of an outbreak of the disease in London, I was led to inquire whether the mode of death from cholera at all resembled the mode of dying from the bite of snake. With the view of getting from those who had witnessed snake-bites, all the information I could, as to the condition of persons bitten, and especially of those bitten by the cobra, I inquired of a very intimate friend, who in 1822 went to India (Bengal Presidency) as Surgeon in the late Company's service. I need hardly state that very many cases came under his treatment, and in answer to one of the several questions from me, as to the effect of "Eau de Luce" on persons dying from snake-bite, he stated: 'I never knew a case in which the Eau de Luce failed when a *drachm* could be got into the stomach.' Subsequent conversation with this gentleman convinced me of the value of this remedy when given in doses of *one fluid drachm in cold water.* Indeed, he has assured me that he never knew it fail to effect recovery, even in cases so far gone as apparently to exclude all hope of saving life." "The Eau de Luce is the compound Tincture of Ammonia of the London Pharmacopœia"—"I have often thought of publishing this

remedy, for I have long since had the full permission of the gentleman whom I have mentioned, to use his information in any way I thought fit."

"In addition to giving the dose by mouth, I would wash the bitten part with the undiluted Tincture; and in the event of the patient being too far gone to swallow, I would inject into the rectum *two drachms* of the Tincture *diluted* with water."

For the following letter and case I am indebted to the kindness of Dr. Arthur Baillie, of British Guiana, and although quite a different plan of treatment is given, and the snake-bite in this instance was occasioned by a *Rattle Snake,* yet, as the case is given in detail, I consider it a very interesting one, and make no apologies for inserting it here, leaving a review of all these cases and suggestions for a future occasion.

"*June* 10*th*, 1868.

"I have lately seen a paragraph in the *Times* and other papers, intimating that you are, in conjunction with another gentleman, seeking information how to treat the bites of the cobra.

"That species of venomous snake does not, I am aware, exist in Tropical America, but of rattle-snakes and other poisonous varieties there are abundance.

"In the year 1833 I was appointed Surgeon to the Bolivar Mining Association of London, and proceeded to the mines of Aroa to take medical charge of the establishment in Venezuela.

"The subject of animal poisons soon engaged my attention. I enquired from a variety of persons for information, without success. Native remedies were quite useless; seven or eight men died from snake-bites during the three years I lived in that locality.

"Some years after, I was residing at Upata, in Venezuelian Guiana. In 1849 I accompanied a native to visit his cattle farm situated thirty miles from my house. For the journey I had provided myself with half a dozen medicines contained in a box which fitted into one of my holsters.

"Two or three days after my arrival, a man was brought into the hut in a state of collapse. I had previously resolved in the treatment of such a case, to excite *vomiting* for the purpose of *eliminating* the poison from the system.

How well I succeeded, you will see by the perusal of the following details, premising, that as neither *Rum* nor *Capsicums* existed in the house, I was dependent entirely on my own devices to cause reaction.

"In all my subsequent journeys into the country, I took with me a small calabash and two half ounce phials, one containing Tinct. Opii (Ph. Lond.), the other Vin. Ipecac. ℥iii., Tr. Capsici fort. ℥i. This combination forms an efficient stimulating emetic.

"Ant. Pot. Tart. being a depressant, would be an unsafe agent for the treatment of similar cases.

"Unfortunately, I am unacquainted with any person connected with India, and as the subject of your enquiry is of great public importance, I have thus addressed you without seeking time to seek a formal introduction.

"CASE.—The subject of it, Francisco, was a strong muscular Indian peon, 45 years of age. He was about one hundred yards from the house, when a rattle-snake wounded him. In a few seconds the pain extended up the limb, followed by loss of sight, and a feeling of intoxication.

"The people observed him throwing his hands about in a strange and violent manner, calling for assistance, and saying that some animal had bitten him. Before they could reach the place, he fell prostrate.

"*May 11th, Friday,* 7 P. M.—Not more than 15 or 20 minutes have elapsed since he was empoisoned. He is supported between two persons, and is completely powerless, having no control over the upper or lower extremities; the countenance is livid, or darker than usual, appears in a lethargic state, requiring to be spoken to in a loud tone; but, when aroused, answers questions distinctly; complains of blindness, and severe pain in the right ankle, extending up the limb and all over his body. There are two small punctured wounds situated perpendicularly about an inch apart, equidistant between the tendo achillis and the external malleolus. The extremities are cold, and the pulse is quite lost at the wrists. I directed the wounds to be bathed with lime juice and administered Pulv. Ipecac. Comp., gr. x.

"*Half past* 7.—The drowsiness has disappeared, he is now able to converse with his companions, the extremities are warmer, and a very slow small thread-like pulse is

distinguishable; shortly after he vomited with great violence (he dined at 6 o'clock.) The bowels acted simultaneously, and his bladder expelled its contents. It appeared to me that an intense degree of gastro-intestinal irritation existed, manifested by spasmodic contractions of the alimentary canal and the bladder. Vomiting, tenesmus, and strangury continued without intermission nearly two hours; the thirst was excessive, and the water he drank was immediately ejected or passed in limpid urine. The quantity secreted was extraordinary. Once I endeavoured to control the spasms and gave him Tinct. Opii gtt. 50 (measured from the lip of an half ounce phial) which was not retained.

"*Half past nine.*—The vomiting has ceased; complains of pain in the stomach and great thirst; tenesmus and micturition disturb him every few minutes; the extremities are not very warm; pulse fuller but slow.

Rep. Tinct. Opii gtt. 50.

"*Ten o'clock.*—The pulse is improving, extremities are warmer and the pains are diminishing.

"*Half past eleven.*—He has passed some blood with mucus per anum, and has also expectorated about half an ounce more of a florid colour with the sputa;* he is extremely restless; has thrown off all his clothing and rolls about in great agony; the pain is now concentrated at the epigastrium; the fingers are cold, and the general temperature is diminishing; the pulse is slow and sinking. Repeat Tinct. Opii. gtt. 60. During the succeeding hour there was a gradual improvement of all the symptoms, and he finally ceased to answer me and fell asleep. The perspiration was suppressed from the commencement, and the respiration natural.

"12*th*, 4 A. M.—My patient is dressed and sitting in his hammock. The pulse is full and quick; he has been perspiring freely, and appears to be excited and loquacious. Ordered him some strong infusion of coffee.

"10 A. M.—He has had some sleep, and is now much better. Complains of pain in the arms and wounded ankle, which is a little swelled and tender. Says that the *right* eye is unable to distinguish objects; has lost the power of

* I have been credibly informed that in fatal cases, blood flows from all the natural orifices of the body.

raising the upper lid. The conjunctiva is a little injected. There is a red zone a line and a half broad round the cornea. The pupil is extremely contracted. The vision of the left is indistinct, the conjunctiva is less injected, the corneal zone is fainter. To apply lime-juice to the forehead and temples frequently. Diet chicken broth.

"13*th*.—He has passed a good night, the pains are relieved, can see a little with the right eye; to have his usual food and remain quiet.

"14*th*.—He is considerably better, the amaurosis is rapidly disappearing, has been walking about with the aid of a stick.

"15*th*.—He is quite well. The eyes have regained their natural appearance, and the vision is perfect.

"I have frankly communicated to you the result of my experience, and hope you will instruct your friends to be prepared for such cases and follow up the same treatment. Of course in a country like India alcoholic fluids will always be at hand to give in the first instance, but I should prefer the *immediate* administration of the stimulating emetic.

"I have indicated dose from ℥ii. to ℥ss. according to the age, &c., of the sufferer."

With the following communication suggesting the use of the Iodide of Potassium, emanating from Dr. G. J. S. Camden, Surgeon Royal East Middlesex Militia, I will close this paper for the present. "Having seen your letter expressing a hope that some person may be induced to offer a remedy for the bites of cobras and other poisonous snakes, also stating that a premium of 1,500 Rupees will be given to the person who suggests a cure, induces me to offer my remedy, which I shall leave for you to try according to your own plan. My reason for thinking it may be a successful remedy is from its speedy effect in stings from wasps and *poisonous* flies. The pain from the common wasp sting is immediately removed, and in those cases in which there is violent oppression in the præcordial region, dyspnœa, violent and rapid swelling or puffing up of the whole body, from the immediate effect of the wasp poison, is greatly relieved in twenty or thirty minutes, and entirely gone in as many or even less hours. The bites of venomous flies, by which

the absorbents violently inflame, very quickly affecting the glands in the axilla, will generally subside in 10 or 12 hours. I have repeatedly used it, and always with success. To the common wasp sting, I simply apply a small piece of Potass. Iodide well wetted to the spot. The pain ceases instantly. In the second event I do the same (if it is painful when stung), and give the patient ℥ss. Pot. Iodide in ℥iss. of water, and direct him to drink after it about three parts of a tumbler full of water. I however once had to give a second dose; as the violent and dangerous symptoms were so much relieved, I did not think it advisable to give a second dose, and that once I repeated it a second time in five or six hours. I have never met with a case of wasp sting on the throat occurring in drinking beer, but I think if the Iodide was tried, provided the patient could swallow, none would be lost.

"To an adult in cobra-bite I would directly give Potass. Iodidi ℥i., Aq. ℥viii., and apply Potass. Iodidi ℥i., Aquæ ℥i., and let it well run into the wound. I would repeat the dose every hour for three or four times. If the symptoms after the second dose began to subside, I should not repeat it so frequently, but I should give three or four doses. What I have noticed in using the Iodide has been its rapid effect. I should much have wished to have tried it myself, but I could not manage to have a cobra without danger, and I have no chance of meeting a case in this country. Hoping some day, after you have tried my remedy and you have spare time, I may have the pleasure of hearing from you &c.

"P. S.—I think a large quantity of water adds greatly to the effect of the Iodide."

Art. XXIV.—Dr. John Shortt's *Experiments on the Cobra Snake Poison, in the Theatre of the Madras Medical College, January 29th,* 1870. Reported by Mr. Apothecary H. H. Lynsdale.

Preparations began at quarter to twelve precisely.

Present—Drs. G. Smith, Brett, Barclay, Keess, Cornish, Thomas, Tyrrell, Martin, Kearney, Harris, Wood, Evezard, four officers from H. M. 45th Foot, Revd. C. Cooper, and Mr. Thom, Principal Doveton College, a number fo

Medical subordinates, as also the Private and Military students of the Medical College.

Dr. Shortt made two solutions, viz., of Potash and Ammonia. First solution, (P.) Liquor Potassæ ℥ss. to Distilled Water ℥iii. Second solution, (A.) Liquor Ammoniæ ℥ss. to Distilled Water ℥iii.

Dog labelled No. 1.—Solution P. (the whole quantity, less 20 minims) was injected hypodermically into this dog in three different parts of the body, viz., over shoulder, middle of spine, and hip; gave pain. Five minutes afterwards, the solution marked "P. c̄ C. P." ℥ii. 20 minims was injected hypodermically; no signs of poisoning produced. At the end of two hours, dog lively as at first, and removed from the theatre.

Dog No. 2—Solution A. was similarly injected (the whole ℥iiiss. less 20 minims); no pain was felt by the dog. Five minutes afterwards, the solution marked "A. c̄ C. P.," ℥ii., 20 minims was injected in like manner. In half an hour, dog became sick, was restless, frothed in mouth, saliva freely running from it, and it lay on the ground; yet at the end of two hours it rallied, but Dr. Shortt was of opinion that it would die, and gave orders that it be kept at the College and watched.

Dr. Shortt prepared the two solutions as above set forth as P. c̄ C. P. or potash with cobra poison, and A. c̄ C. P., or ammonia with cobra poison as follows:

To one grain. of dry cobra poison were added Aquæ Distillatæ ℥ii.; this solution was freely agitated till all the poison was taken up, which is proved by its becoming frothy and slightly opaque; to this was added Liq. Potassæ ℥ss., mixed, and this I call the P. c̄ C. P. solution. Two quails were now produced.

No. 1 was hypodermically injected with 20 ♏ of P. c̄ C. P. solution. This quail lived for two hours and died quietly, simply drooping its head and dying; this was a sickly and not a fresh quail, and it is supposed may have been trodden upon, as it lay on the floor of the theatre where the spectators all crowded around.

No. 2 quail was similarly treated with 20 ♏ of A. c̄ C. P. solution. This quail drooped its head and fluttered in three minutes, repeated these symptoms twice, and died at the end of five minutes.

Hurried respiration was the first effect, drooping the head, closing of eyes and fluttering, and lastly the legs stretched out to their full extent backwards, forming a straight line from neck to toes. Head with upper part of neck formed a curve downwards.

These two quails were first operated upon with the prepared poison, solution of ammonia and of potash severally; as Dr. Shortt stated, to prove the power of the poison existing in these two solutions. Then dogs No. 1 P. and No. 2 A. were brought forward and acted upon, as previously stated; the result has been already described. Both survived at the end of two hours, but No. 1 P. was not at all affected, while No. 2 A. sickened, and was removed from the theatre in a dull state.

Dog No. 3 was operated upon by opening superficial veins in the fore and hind legs, and injecting them with a solution of Liquor Potassæ and water, that is, ℥ss. Liquor Potassæ, and Distilled Water, ℥iii.; the whole of this quantity was injected.

Time—Ninteen minutes after injection of potash solution, a first size cobra, five feet long, was allowed to inflict a wound on the dog's thigh; this dog died 45 minutes after, tongue hanging out.

Dog No. 4 was similarly operated upon, only using Liquor Ammoniæ ℥ss. to Distilled Water ℥iii.

Time—Sixteen minutes after being charged with the Ammonia solution, a fresh cobra (the self-same cobra that bit its keeper the other day, who was restored by Dr. Shortt under his potash and brandy treatment, and by suction of wound,) was applied to this dog, or four minutes to one o'clock. Eleven minutes after being bitten dog showed signs of dying, eyes became fixed and glassy, insensible to light and objects; respiration hurried, heart labouring, tongue hanging out, head turned to one side, and muzzle pointing towards chest; respiration diaphragmatic; evidently dying from action on medulla oblongata; complete loss of deglutition. Died 25 minutes after 1 P. M., or in 29 minutes.

Three chickens were now brought forward, and the blood taken from dog No. 4 after death (five minutes), was hypodermically injected into TWO chickens. This had no effect. The third chicken was injected with *fresh* cobra poison mix-

ed with Liquor Potassæ. This also had only the effect of sickening the chicken, which was alive at the end of one hour when I left the theatre.

The solution made from the pure cobra poison with Liquor Potassæ became darkened by keeping, resembling venous blood, and deposited a slight sediment; which a medical gentleman present said resembled human blood after cyanogen poisoning.

The blood taken from the heart of the dog No. 4 that died from being bitten by the cobra, and which was previously treated by the Liquor Ammoniæ solution injected into vein, did not coagulate, though it remained in the wine-glass for an hour. A peculiar glassy pellicle was formed on the surface.

Dog No. 5 was not tested as proposed by Dr. Shortt, viz., after being bitten by a fresh cobra, to have administered to it fifteen minims of Liquor Potassæ with brandy every hour. There was no one prepared to undertake the carrying out of this treatment, so the dog was not operated upon. I verily believe this to be the most correct plan of treatment, since both the patient who was bitten, and Dr. Shortt who sucked the wound inflicted by the cobra on its keeper, were cured by this mode of treatment.

Note.—I can vouch for the correctness of the time occupied in the different operations above specified, since I held an open face watch in my hand, which I consulted from time to time.

Art. XXV.—*Contributions to the Practice of Midwifery.*

By P. T. Mootoosawmy, G. M. M. C., Fellow of the Obstetrical Society of London, Native Surgeon, Civil Dispensary Manargoody, Tanjore District.

Labour with Retention of Placenta. Recovery.

Chinnappal, a short stout woman, of dark complexion, aged about 30, and of the Corava caste, was brought to hospital about 4 A. M. on the 17th November 1869, with retained placenta. She had been delivered about ten hours previously of her seventh child—a male, and as the placenta did not

come away, and could not be withdrawn, she was recommended to seek assistance at the hospital, whither she was brought by a female relative who supported the child, still undetached from the mother. The woman arrived in a state of exhaustion, cold, blanched, and almost pulseless, and she complained of urgent thirst. Uterus firmly contracted, with a portion of the placenta protruding through the os internum, umbilical cord cold and pulseless. No hæmorrhage, though it was reported that the woman had lost much blood after the birth of the child.

By account, the patient's previous confinements had all been quick and easy, and her six children were said to be alive and well. The pains in the labour under notice set in on the afternoon of the 16th November, and delivery took place about 7 P. M. of that day. The placenta not having been expelled, some vigorous efforts appear to have been made to extract it; and one woman, it is said, essayed to dislodge it by standing on the patient's abdomen, and *treading* the uterus into expulsive action!

On admission, a draught containing brandy and tincture of opium was administered, and repeated every 15 minutes. After the exhibition of the third dose, when there was a decided improvement in the state of the pulse, I proceeded to extract the placenta, having in the meantime tied and divided the cord. A considerable portion of the placenta was found adhering to the fundus uteri. This was carefully detached, and the organ withdrawn entire. It was somewhat indurated; no hæmorrhage followed its withdrawal. Two more doses of the brandy and tincture of opium were given, with thirty minims of the tincture of ergot in each, and the uterus compressed with a pad and binder. The patient slept easily for some time afterwards, and awoke tolerably refreshed; she complained of weakness, but beyond this, up to the time of leaving hospital, no untoward symptom made its appearance. There was suppression of milk, and the infant was fed with asses' milk.

The woman left hospital on the fourth day of her confinement, notwithstanding that she was strictly cautioned against doing so, and the risks she ran clearly pointed out to her.

Remarks.—The subject of the above complication was a member of a rude and barbarous class known as Punny Coravars, a wandering tribe, without fixed habitation, and to be

found in all parts of Southern India. Their chief occupation is mendicancy, in which each individual of a family takes a part. Some obtain employment as scavengers; and though a few engage at times in the manufacture of mats, from the leaves of the date palm, it is in view that the proceeds of their industry may be applied to the purchase of arrack and toddy, of which they are inordinately fond. They do not however long continue to follow any trade or useful occupation; they soon return to their legitimate business of begging; and, it is said, that though some of them succeed in obtaining for themselves a competence, and are considered by their companions to be well-to-do, they will not abandon the practice of begging handed down to them from their forefathers.

In their habits and persons these people are extremely uncleanly, and in disposition excitable and quarrelsome. They practise polygamy, receiving with each wife a dowry consisting of pigs, the number of these being regulated by the possessions of the bride's parents.

From the peculiar wandering open-air life they lead, the Coravars are extremely intolerant of confinement in buildings. Hence the hurry of my patient to quit the hospital. She could not be brought to understand the risk to life she thus incurred. In fact, females of her class do not look upon parturition as involving any danger at all, and that anxiety so common to her sisters in more civilized life, as the time of their travail approaches, finds no place with them. No preparations for the coming event or expected stranger are made, and the daily routine of travel and begging is performed as usual. The pangs of labour, perhaps, overtake the woman on the line of travel, but she is not at all put out by the circumstance. She quietly retires to the friendly shelter of some road side bush, and there, perhaps without even the rude assistance of her own people, she gives birth to her infant; allowing herself but a short repose after this event, she secures her infant on her lap and resumes her journey. Under more favorable circumstances, she receives some attention in a professional way, and the tender shoots of the date palm, in the healing efficacy of which these people have much faith, are exhibited to her immediately after confinement.

This case furnishes another illustration of the amount of ill-usage a native female will sometimes sustain without any

ulterior important ill consequences. Here we have a remarkably novel and barbarous means to rid the uterus of a retained placenta had recourse to with scarcely appreciable evil results. The idea of one woman standing on and treading the recently emptied uterus of another, without producing any thing more than firm contraction, is astonishing. I should certainly have felt no surprise, after hearing the history of her case, had the patient lost her life from peritonitis or ruptured uterus. There can be little doubt that traction by the cord was freely tried, and that the poor woman's escape from an inverted uterus is mainly due to the firmly contracted state in which the uterus was in at the time.

On her admission into hospital, the woman was in a state of great exhaustion induced by the hæmorrhage which followed the birth of the child, but she soon rallied. Up to the time of leaving the hospital the suppression of milk continued, but I believed that the secretion would soon be restored. The suppression was evidently temporary, and had its cause in the loss of blood previously sustained.

Art. XXVI.—*Case of General Phlebitis.* By J. Wilson, Esq., Medical Officer of Coonoor.

(Communicated by the Inspector General Indian Medical Department.)

A. B., Coffee Planter, Æt. 40.

This gentleman sent for me on March 27th, 1869, as he was suffering from slight fever and general prostration, which he ascribes to exposure to the sun. His general health has been robust, but latterly he has had much anxiety and distress of mind; and from having several coffee estates under his management, lying miles apart, has had to take more physical exertion in looking after them than he could bear, and daily went to bed quite worn out in mind and body; awaking unrefreshed, as from mental anxiety, he seldom slept well and had a poor appetite.

Tongue covered with a slight fur, skin warm, pulse 80, bowels regular.

℞ Quinæ Sulph. gr. v.
Night and morning.
℞ Liq. Ammoniæ Acet. ℥ vi.
Mist. Camphoræ ℥ viii.
Two table spoonfuls every 3 hours. Broth.

March 30th.—No better, the feelings of prostration have increased, there is a look of weariness and anxiety about the face, which is haggard, he sleeps very badly and suffers from headache, intense pain in the back and aching of all his limbs, says that about a week ago he scratched his ankle, with a thorn On examining the limb there is a slight mark of a puncture from a thorn on the outer left ankle, and the veins of the same limb as far as the groin are tender to the touch, and the superficial ones quite red and distinctly marked.

Omit Quinine and Saline Mixture.

℞ Acid. Nit. Muriat. dil. ℥ ii.
Pot. Chlorat. ℥ ii.

to be mixed in a pint of barley water and taken in the 24 hours.

Hot fomentations to the affected limb. Soup.

March 31st.—Worse this morning. He had no sleep, and complains of his whole body aching in an intolerable manner. The inflammation has now extended to the other limb, the veins of which are red, hard, and tender to the touch. Pulse 60, skin hot and dry, tongue moist and coated with a white fur, bowels regular, urine scanty.

Cont. Chlorate of Potash and Nitro-muriatic Acid.
℞ Morphiæ Acet. gr. i.
Mist. Camphor. ℥ iii.
At bed time.
Soup ad libitum.
Brandy 4 oz.

April 2nd.—Prostration increasing; every vein is inflamed and red down to the very ends of the fingers; he can scarcely bear the slightest touch on any part of his body, and the headache is intense and persistent, no doubt from the veins in the head being also inflamed. Tongue more coated and dryer. Pulse 50, bowels regular.

Cont. Pot. Chlorat. and Acid.
Cont. Morphia.
Cont. Soup ad lib.
Brandy 6 oz.

April 5th.—Prostration has increased since last report, and the pulse has fallen to 40; no alteration in the aching or tenderness; headache also unrelieved, but he gets a little

sleep from the Morphia, and takes his soup, essence of beef, &c., remarkably well.

Cont. Morphia, Chlorate of Potash, and Acid as before.

Jelly and Soup.
Brandy 10 oz.

April 9th.—The inflammation in the limbs is now dying away, and the colour of the veins is changing from a bright to a dusky red. They are also less tender to the touch. Headache somewhat less, but prostration greater than ever. Pulse 40. Tongue much coated but moist.

Cont. Chlorate of Potash, Acid and Morphia.
Soup and Jelly ad libit.
Brandy 16 oz.

April 11th.—Better, much less aching of the limbs and headache; veins generally have resumed their natural color, but numerous little pustules have formed in their course, chiefly in the upper limbs. The veins in the thigh are also still hard, and feel like a cord under the finger. Tongue clearing, pulse 45.

Omit Chlorate of Potash and Morphia.
℞ Ammoniæ Carb. ʒ ii.
Tinct. Cinchonæ Co. ʒ iii.
D. Cinchonæ ʒ viii.
Two table spoonfuls every 4 hours.
Soup and jelly, brandy 12 oz.

From this date he gradually improved, and by the end of April was quite well, but very weak; so after a change to Ootacamund for a month, he returned to Coonoor restored to his former health.

As general phlebitis is, I believe, a very uncommon disease, this case possesses some interest; it could not have arisen from such a very slight injury as this gentleman had sustained, had not his vital powers been previously much impaired. He had fortunately a wonderful power of taking nourishment during his whole illness, and the quantity of soup he consumed was astonishing. This with the brandy no doubt contributed greatly to his recovery. The 16 oz. of the latter, which he took daily, had no more apparent effect on him than so much water, although previously to this illness he never touched spirits and rarely either beer or wine.

Art. XXVII.—*Case of Tetanus following on Amputation of the Left Thigh.* By W. S. Fox, Esq., in Medical Charge Vellore Jail.

(Communicated by the Inspector General Indian Medical Department.)

Convict Loobadoo, Æt. 38 years, sentence 14 years, in Jail 11 years, was admitted into hospital in the Fort Jail, Vellore, on the 18th March 1869, with chronic rheumatism and pulpy degeneration of the left knee. During the previous three years he was repeatedly under treatment both in this and other jails for rheumatism of the large joints, latterly chiefly of the left knee. On admission the joint was much enlarged, the patella protruded, with a soft semi-elastic fulness on both sides, and fluctuation in and around the joint; there was severe aching pain, and he was worn looking and emaciated from previous disease. The general line of treatment was rest, with a splint, leeches, blisters, iodine, Scot's plaster, and opiate liniments; internally, colchicum with blue pill, opiates and tonics. The disease, however, gradually got worse, the pain assuming a severe gnawing character, worse at nights. About the end of June large collections of matter began to form in the calf of the leg, which were evacuated on two occasions by incisions, giving vent to several ounces of half formed pus. As his health was rapidly failing from the constant irritation and want of rest, operation evidently affording the only chance of life, I determined to attempt excision, intending, should I find the disease too extensive, to convert it into amputation. I had a splint made with the sides on hinges as used by Dr. Butcher, and on 23rd July I attempted to put him under chloroform, but vomiting setting in, I was obliged to defer it until next morning, when the patient being put under its influence, I opened the joint by the H incision. All the internal structures were far advanced in disease, the synovial membrane was of a blackish yellow color, the cartilage was nearly all ulcerated away from the condyles of the femur and head of the tibia. The bones being turned out by flexing the joint, and dividing the ligaments, a slice was removed from the femur, about a quarter of an inch thick, without coming on sound bone. A second was then taken off with the same result, the cancellous portion remaining soft and black, breaking down under the finger,

with exudation of a dark oily fluid. The head of the tibia being in the same state, I thought it better to amputate, which was accordingly done in the lower third of the thigh by antero-posterior flaps; five arteries were taken up, the wound was freely sponged over with solution of Carbolic Acid, and all oozing having stopped, brought together with points of suture, and lint steeped in Carbolic oil applied. But little blood was lost, and the whole operation was completed in about 25 minutes. An opiate draught was then given. About an hour afterwards I was sent for, as hæmorrhage had set in. On taking down the wound I found it proceeded from two small arteries which I ligatured, and put up the stump as before, a tourniquet was left loosely on the thigh in case it might be required, and a draught of Tinct. Opii ℥ xxx., Mist. Camph. ℥ i. given, but as the patient was habituated to opium, and it had no effect, Tincture Opii. ℥ xl. was repeated three hours after, which procured sound sleep. The following three days there was some irritability of the stomach, which was allayed by Haust. Efferv. with Hydrocyanic Acid; the pulse was regular, appetite good, and he slept well. A liberal diet with four ounces of brandy was allowed, and except wetting the dressing occasionally with Carbolic Acid lotion, the stump was left untouched until 27th August, when on removing the dressing, the flaps were found firmly united. There were only a few drops of pus from the track of one ligature, and no smell whatever, a small portion of the surface was unhealed, the ligatures were all firm. The points of suture were removed, and the stump dressed with a weak lotion of Carbolic Acid.

August 30th.—Two ligatures were removed.

September 3rd.—Two more came away on the 5th; a bedsore formed on the right buttock, and a soft poultice was applied. During the day he was restless and irritable, tossing about, and in the evening I was sent for, being informed that the stump was bleeding. I found a slight oozing from the track of the ligature on the main artery, the stump felt hot and tender. The oozing was at once checked by cold water applications. A draught containing Liquor Morphiæ Hydrochloratis ℥ xl., Tinct. Digitalis ℥ x. was given. The patient slept well, and was quite tranquil next morning. The bleeding was, I think, caused by his hurting the stump when tossing about the bed.

The ligature on the main artery came away on the 17th September, there was then only a small portion, near where the ligatures had been, unhealed. His appetite continued very good, general health improved daily, the bed-sores were healed, and he was allowed out into the compound for a few hours daily for about a week, when on the evening of October 3rd I was sent for, about 4·30, by the Dresser, symptoms of tetanus having set in. On my arrival at the Jail I found the muscles of the jaws rigidly contracted, teeth firmly clenched, and the peculiar grin from the corners of the mouth and eyes being drawn outwards. Saliva was dribbling from the mouth, the muscles of the neck and abdomen were all rigid and hard, and the recti abdominales felt like straps. The stump was drawn up and contracted with great violence against the abdomen, he was unable to speak, but respiration was not much affected. He seemed quite sensible. The spasms remitted a little occasionally. I had him put into a hot bath, a strong turpentine and oil enema given at once, the stump covered over with mercurial ointment and a fomentation cloth applied. Tinct. Cannabis Indicæ ℿ xl. was given in a small draught (swallowing being rather difficult at times), and ordered to be repeated in ℿ xxx. doses every hour, until sleep or some diminution of the spasms took place.

4th October.—On my morning visit I found him in exactly the same state, there had been no sleep, nor did there seem to be any impression produced on the spasms. The Tinct. Cannabis had been given in the doses ordered at rather longer intervals than the hour, as paroxysms of difficulty in swallowing occurred at times. It was ordered to be continued in the same manner. During the day some symptoms of improvement appeared, and he was able to swallow nearly a pint of broth. The tincture was given at longer intervals. On my evening visit at 5 P. M. I found a most marked alteration for the better, the spasms had quite ceased, although the abdomen still felt very hard, and the sterno-cleido-mastoids were rigid. His eyes were rather injected, so I stopped the tincture altogether, and ordered Calomel gr. v. He had taken of Tinct. Cannabis ʒvi. in all, without sleep up to this. The next morning I found him nearly well. He had slept the whole night soundly, there were no spasms, he took some broth and conjee, eyes looked natural, but the muscles of abdomen and neck were still a little hard. The bone had however forced its way through the stump,

the flaps were torn and contracted, and could not be made to cover it again.

October 7th.—He was quite free from all tetanic symptoms, appetite fair, all the secretions normal, spirits seemed good. In fact he seemed but little affected by what he had lately suffered, except for a little weakness and great irritation of temper. The stump however was quite destroyed, and on the morning of the 8th I put him under chloroform, and carefully opening the stump with the knife, I sawed off about an inch and a half of the bone and brought the flaps together with a few sutures, supported it with broad straps of plaster and a bandage; not having any more Carbolic Acid, I had to dress it in the usual way with cold water, hardly more than a drachm of blood was lost, no artery required ligature. He continued very irritable and excessively stubborn, could not be induced to keep the stump quiet, appearing to take great pleasure in showing how he could raise it up and down by the muscles of the part. I tied it down with a bandage, but it was no use, as he either undid it at night or tossed about, so that it had to be taken off. The only way I could keep him at all quiet was to stop his brandy, of which he was very fond. He was allowed four ounces daily, and six ounces of arrack, and nourishing diet. He however did not gain strength, and as he still could not be persuaded to keep the stump quiet, the flaps could not unite properly again. The anterior one sloughed over the point of the bone, and I had to remove a small slice again with the saw on the 19th October, but did not put him under chloroform, using the knife very little. He continued to sink until the 26th October, when he died from exhaustion.

ART. XXVIII.—*Case of Diabetes Mellitus in a Hindoo.*

By A. PORTER, M. D., Civil Surgeon, Akola.

THIS case is of interest as an example of a disease which is rare among natives of India. Morehead* states that he had seen only six cases during the whole of his service.

The points of interest in the case itself were the daily

* Researches on Disease in India, 2nd Edition, page 502. (Our experience is very different.—ED.)

febrile exacerbations toward evening, the temperature in the axilla rising to 100° or 101° F., and this long before there was the least sign of a tubercular deposit in the lungs; and the comparatively little increase over the usual amount of urine secreted—at no time was more than five pints passed in 24 hours, the average being rather less than four pints, with a mean specific gravity of 1030 (nearly), yet the emaciation was very rapid.

The treatment adopted did not seem to have much effect. The decrease in the quantity, and lowering of the specific gravity of the urine that took place latterly, were probably due to a decrease in the patient's powers of life, rather than to any effect of the medicine administered. When released the patient was able to walk out of Jail, but there is little doubt that he died shortly afterwards.

It may be here noted that the only abnormal constituent found in the urine, besides sugar, was indican. Sulpho-cyanogen was carefully tested for on several occasions, but was not discovered.

Lutchmun, Koonbee, prisoner in Akola Jail, aged 30 years, married, and of temperate habits, was admitted to hospital on February 10th, 1868, suffering from symptoms of Diabetes Mellitus.

Previous History.—Small-pox as a child, and several attacks of intermittent fever in his boyhood, and during the ten years he has been imprisoned in the Akola Jail. His present symptoms are stated to have been first noticed after lying in the open air on the night of the 22nd of last month, while being temporarily removed with other prisoners to an out-station. He principally complains of great craving for food and drink, frequently micturition, and especially muscular weakness. He is already considerably emaciated; skin and tongue dry; bowels constipated; pulse, when lying quiet, 71, but easily excited; respirations 16; temperature in axilla 98° F., in the evening 100° F.; urine 46 oz., sp. gr. 1028, pale and acid. Trommer's test discovers sugar in large quantity. Ordered opening medicine, and gentian as a tonic; one pound of mutton, and half rations of bread.

February 11th.—Pulse 78, soft; respirations 16; temperature in axilla 99° F., 100° F. at 6 P. M.; urine 48 oz., sp. gr. 1022.

14*th.*—Pulse 52, weak; respirations 16; temperature 97° F., 100° F. at 6 P. M.; urine 48 oz., sp. gr. 1022, pale and acid, containing indican and much sugar. Complains much of thirst and hunger. Bowels continue free. Treatment continued.

18*th.*—Pulse 72, weak; respirations 30; temperature 97° F., 100° at 6 P. M.; urine pale, acid, sp. gr 1025, 96 oz. Great weakness complained of. Tongue white, moist; skin dry and scurfy.

20*th.*—Pulse 100, soft; respirations 27; temperature 100° F., 108° F. at 6 P. M. Tongue thickly white, furred. Gentian stopped; citrate of soda given in ʒ i. doses twice daily, also cod-liver oil and tincture of steel. One seer of milk and two ounces of brandy added to the diet.

21*st.*—Pulse 68, soft; respirations 20; temperature 97°.2 F.; urine 73 oz., pale and acid, sp. gr. 1028, contains red indican and much sugar.

22*nd.*—Pulse 72; respirations 24; temperature 98°·2 F., 100° F. at 6 P. M.; urine 73 oz., sp. gr. 1030.

23*rd.*—Pulse 72; respirations 24; temperature 97°·2 F., 101° F. at 6 P. M.; urine 72 oz., sp. gr. 1031.

24*th.*—Pulse 72, soft; respirations 24; urine 72 oz., sp. gr. 1032, contains red indican and much sugar.

25*th.*—Pulse 80; respirations 20; temperature 97°·2 F., 100° at 6 P. M. Bowels costive since two days. Opening medicine ordered.

26*th.*—Pulse 56, full but soft; respirations 18; temperature 101° F. at 6 P. M.; urine pale, 73 oz., sp. gr. 1028.

27*th.*—Pulse 52; respirations 20; temperature 97° F., 101° F. at 6 P. M. Complains of hunger, but says that the thirst is less than formerly; urine 72 oz., sp. gr. 1022.

29*th.*—Pulse 68, irregular and weak; urine 72 oz., sp. gr. 1024, very pale and acid, contains red indican and much sugar.

March 1*st.*—Pulse 52; temperature 97° F., 100° F. at 6 P. M.; urine 70 oz., sp. gr. 1032, pale and acid. Complains of burning pain in the abdomen. Tongue moist, white, furred; bowels free. Citrate of soda stopped, as it is seemingly rather doing harm than good.

3*rd.*—Pulse 56; respirations 20; temperature 97° F., 101° at 6 P. M.; urine 70 oz., sp. gr. 1023, contains red

indican and much sugar, is very pale and acid. Hunger, thirst, and heartburn much complained of.

5*th.*—Pulse 72; respirations 22; temperature 97° F., 101° F. at 6 P. M.; urine 68 oz., sp. gr. 1022.

10*th.*—Pulse 64; respirations 24; temperature 97°·2 F., 100° F. at 6 P. M.; tongue white, furred, moist; urine 68 oz., sp. gr. 1023, pale, acid. Hunger, thirst, heartburn, and much weakness complained of. Treatment continued.

12*th.*—Pulse 64, full but soft; respirations 20; temperature 97° F., 100° F. at 6 P. M.; urine 58 oz., sp. gr. 1023.

15*th.*—Pulse 80; temperature 98° F., 100° F. at 6 P. M.; tongue slightly cleaner; bowels costive; urine 71 oz., sp. gr. 1025. ℞ Ol. Ricin. ℥ ss.

22*nd.*—Pulse 54, full; respirations 24; temperature as above; urine 50 oz., sp. gr. 1016. Treatment continued.

26*th.*—Pulse 54, full but weak; respirations 20; temperature 97°·2 F., 100° F. at 6 P. M.; urine 45 oz., sp. gr. 1024. Lungs were examined and no disease detected.

30*th.*—Pulse 60, small; feet and ankles œdematous; pain in the knee joints complained of; temperature as above; urine 47 oz., sp. gr. 1022, pale, acid, contains red indican and sugar. Ordered feet and legs to be bandaged.

April 3*rd.*—Pulse 52, full but soft; respirations 24; temperature 97° F., 101° at 6 P. M.; urine 43 oz., sp. gr. 1024.

7*th.*—Pulse 52, soft; temperature as before; urine 44 oz., sp. gr. 1026.

10*th.*—Pulse 60; urine 44 oz., sp. gr. 1024.

16*th.*—Pulse 64; urine 46 oz., sp gr. 1025. Is so weak as to be unable to sit up for any length of time. Has slight cough, rough lengthened expiratory murmur present in the apex of either lung, but no dulness on percussion detectable.

25*th.*—Pulse 56, soft; respirations 24; temperature 97° F., 100° F. at 6 P. M.; urine 47 oz., sp. gr. 1024, pale and acid, contains indican and much sugar. Sulpho-cyanogen was tested for, but its presence was not detected.

May 1*st.*—Pulse 78, soft; respirations 26; temperature 97° F., and 101° F. at 6 P. M.; urine 46 oz., sp. gr. 1023. Œdema of feet and legs somewhat lessened.

8*th.*—Pulse 64, soft; respirations 28. Signs of tubercular deposit well marked in the apex of the right lung, less so in that of the left lung. Urine 44 oz., sp. gr. 1024, pale and acid, contains indican and much sugar, but no sulpho-cyanogen.

10*th.*—Pulse 84, weak; respirations 26; temperature 98° F., at 6 P. M. 101° F.; urine 46 oz., sp. gr. 1027. Œdema of ankles rather increased, eyelids also œdematous. Cough rather troublesome in the early morning and towards evening; no spit.

13*th.*—Pulse 99, soft; respirations 28; dulness on percussion over clavicular region on either side well marked, as are also the other usual symptoms of phthisis pulmonalis at this stage. Says he feels better. Was discharged from Jail, the term of his sentence having expired on this date.

It may be here noted that the specific gravity of the urine given in the body of the report was taken at the temperature of about 90° F., hence to correct to 60° F. would require the addition of four to each.

Art. XXIX.—*Case of Chronic Hydrocephalus.* By John Shortt, M.D., F.L.S., Surgeon, Superintendent General of Vaccination.

Pitchedoo, Æt. 16, Telugu; profession, a beggar; (23rd November 1869.)

My attention was drawn to a native youth in one of the public streets of Nellore, from the peculiar shape and size of his head. I invited him to come to me at the Traveller's Bungalow, where I was putting up at the time, and he came as directed, the same afternoon. On examination, I find that he has an unusually large head, well covered with black coarse hair, and a small growing moustache, whiskers, and beard. Stands 53 inches in height, but slightly stooped in consequence of a spinal curvature about the centre of the back; does not appear to possess complete power over the left arm, nor can he straighten the fingers of that

hand; the legs are curved backwards to a blunt angle from stiffness of both knee-joints, so that he cannot straighten his lower extremities; the feet are flat, with the great toes of each foot curved outwards over the others; has not even complete power over the lower extremities; walks with the aid of a stout stick held in his right hand, dragging his right leg after him, but can raise and throw out his left leg pretty well. The head gives the following measurements: circumference 27 inches; across from ear to ear 17½ inches; from root of nose to a line with the junction of the skull with the atlas 22 inches. The head is flat at the top, but protrudes greatly before, behind, and on both sides; the most prominent points are the frontal, the parietal, and occipital eminences. The whole occipital bone protrudes quite out of proportion and conceals the back of his neck from view; the bones of the skull are firmly united, and the skull itself, as a whole, is well consolidated; the face is slightly flat, with the nose depressed, having the alæ expanded; the teeth are white and regular; sight and hearing stated to be good; shades his eyes sometimes with his hand on looking out, which he attributes to the slight overhanging of the forehead; he is slow of speech, but talks well and sensibly; states that he has neither parents nor relatives, nor can he give any account of his family; lives by begging. Gave his own age as being 16, although he looks a little older from the growing hair about his face. His body seems pretty well nourished, but he looks small altogether for his age. He believes that he was born with a large head. Circumference of chest 27½ inches, arms 8 inches, and thighs 13 inches.

Remarks.—This case is of considerable interest from the age to which the patient has attained. In Volume XII of the *Madras Quarterly Journal of Medical Science*, Page 246, under the head of Medical Miscellany, will be found another case of Hydrocephalus in a subject, aged 7, on whom I reported in 1867. The subject in the present case is over double that age. Although his head is smaller by four inches, yet it is very much larger than natural. The average circumference of the head of 25 native boys between 12 and 13 years of age was 19·6 (vide *Madras Quarterly Journal of Medical Science*, Volume IV, page 227, under the head Remarks on Homicide by Dr. Shortt.) Of the average circumference of the heads of 25 adults of 16 different tribes, the greatest measurement

was 21·16 (vide Tribes on the Neilgherries, 1868, page 29, by author of this paper.) So that the head of this subject is 7·94 inches larger than that of boys under 13, and 5·74 over that of adults. It is certainly remarkable the amount of pressure the brain can stand when it is uniform and gradual, yet we see numerous instances how easily life is cut short either by accident or disease; a trifling effusion of blood on the brain, or a fibrous or osseous tumour, not perhaps the size of a hen's egg, causing pressure. Cases of this nature deserve to be noticed and recorded as to their ultimate termination. In European adults an average of 25 men gave 22·45 as the largest sized head (vide *Madras Quarterly Journal of Medical Science*, Volume IV, page 103, under the head A Contribution to Ethnology, by the author of this paper.)

ART. XXX.—*Cases of Gun-shot Wounds treated in the Bowring Hospital, Bangalore.* By Garrison Assistant Surgeon W. FARQUHAR, M.D., in Medical Charge.

I.—ABDUL RHYMAN, Æt. 30 years, a powerful man, with muscles largely developed, was admitted on 16th December 1868, with a gun-shot wound of right fore-arm.

While handling a musket loaded with small shot, the butt-end being on the ground, it accidentally went off, discharging the whole contents into the fore-arm. This took place thirty hours before admission.

The whole of the flexor aspect of fore-arm, from an inch below the bend of elbow to three inches from the wrist, is laid bare. The exposed muscles and tendons are much torn, and in some places sloughy, with purulent discharge. The extremity is vastly swollen. No apertures of exit on the other side. Radius and ulna intact. Wound has a surface of nine by six inches, and is very foul. Skin looks as if it had been cut straight with a knife, and the edges been drawn widely asunder. At the upper part the muscles are deeply cut, and it appears as if the bulk of the charge had entered here. To cleanse the wound by a poultice, and afterwards to smear it freely with carbolic acid oil, (Lister's), and then to dust over all a thick layer of finely powdered charcoal.

23*rd Dec.*—Surface very much cleaner.

27*th Dec.* 8 P. M.—Found, on an urgent call, that the ulnar artery had given way near the middle of its course. Bleeding was temporarily arrested by Mr. Apothecary Pereira catching the vessel with a spring forceps and giving it a slight twist. The vessel, which had been pushed into a superficial position by the swollen underlying soft parts, had a black and sloughy appearance for some inches, but was almost hidden by granulations. The ulnar nerve was agglutinated to it. By careful sawing movements with the aneurismal needle, more than with the knife, the vessel was isolated, and a ligature placed on both ends, one and a half inches above and below the bleeding point.

The healing process went on steadily, the surface continuing throughout the type of a healthy sore; small pellets of lead were picked out now and again. When the sore was half closed, it shewed a hœmorrhagic tendency, which it required strong astringent lotions to check; just as cicatrization was completed, a most plentiful crop of eczema broke out over the whole of the new skin. It proved very intractable; but of various applications, the tannate of glycerine did most good. From the great contraction of the flexor muscles, much difficulty was experienced in opening out the almost closed fist; but by careful and gradual extension on a splint, this was overcome, and he was discharged on the 26th March 1869.

II.—Dassee, Æt. 45 years, a ryot, was brought into hospital on 25th October 1869, from the country, with a gun-shot wound of the face, caused a fortnight previously. He presented a sad spectacle, more than one half of his face being literally blown away. The soft parts from the angle of the mouth, on left side, to the ear, were gone, also a portion of upper and lower lips. The lower half of ascending ramus, with the angle and portion of horizontal ramus of lower jaw had also disappeared. What remained of the left side of lower jaw was quite dead, and some blackened teeth were attached to it. The soft parts on left malar bone were raw; and vision was lost in both eyes, which were shrunken and chemosed, and had corneal opacity. On the right side, the lower jaw was fractured. Lips and mouth much swollen, and saliva flowing abundantly. All the raw surface and face covered with a red powder like cinnabar. Pulse small and weak.

The history is, that on approaching a well, where a shepherd friend of his was standing with a gun, the latter pointed the gun, and asked, as if in play, whether he would fire. Dassee said "don't, don't," but the gun was fired, at an arm's length. It was charged with slugs.

After cleaning the raw surfaces they were dressed with pledgets of lint dipped in carbolic acid oil ; support to the remaining portion of jaw on right side was given by a piece of moulded paste-board and bandage. He was put on milk, spoon, and beef-tea diet, with a little arrack occasionally.

There is nothing in the treatment to record, except that a splinter of bone, with two or three teeth, was removed when it became loose. The raw surfaces gradually cicatrized, and he took fair quantities of food, but he remained in a weak and miserable condition, forbidding any operative proceeding, even had it been called for. In the second week of December, diarrhœa set in, but was checked by treatment. Being very urgent to return home, and as the raw surfaces were healed, he was discharged on the 21st December 1869, in the hope that with fresh country air he would sooner regain strength than in a hospital atmosphere. He was so far improved that he could swallow rice, which he preferred to liquid food.

III.—Veerasawmy, Æt. 45 years, a cooly, was admitted on 8th December 1869, with a gun-shot wound, received, as he states, while he was stooping, quarter of a mile behind the butts, to pick herbs.

The ball had entered about two inches above the angle of the lower jaw on the left side, emerged close to the angle, without injuring the bone, and passed deeply into the neck through an aperture at the posterior border of the sterno-mastoid muscle, exactly at its middle. The first opening was jagged and irregular, the two latter were almost clean cut wounds.

Failing to detect the missile by external examination and by a probe, I introduced the little finger of the left hand downwards and backwards, and found it firmly imbedded in the deep muscles of the neck. I loosened it with the finger, and after a fruitless attempt to seize it with the bullet forceps, I again inserted my little finger, and using it as a guide, passed the blade of Coxeter's bullet extractor down one side of the ball ; the seizing rod was then run down, and the bullet secured and extracted, with a grasp

on it of one-third of the circumference of the ball. There was only a little oozing of blood. The healing process went on favorably without interruption, under dressing of carbolic acid oil. For a few days pain and numbness near the angle of the scapula were complained of, but on the 8th January 1870, he was discharged well.

Art. XXXI.—*Case of Severe Injury of the Foot.* By Assistant Apothecary L. W. Lincoln.

While in Medical Charge of the station of Ghooty, the following case came under my care, which, as it presents some features of interest, I forward for publication.

Madoolatey, Æt. 45, a ryot of the village of Koilkoontla, in the Kurnool District, a healthy looking, well conditioned man, presented himself for treatment with the following history of his case. States that while at work in his field, about twelve months previously, he accidentally inflicted a wound on the dorsum of his left foot, with the scythe with which he was working at the time. He describes the wound as having been very severe and attended with so much hæmorrhage that he grew faint from the loss of blood, and was obliged to be carried home—there he was soon afterwards seen by a Native Doctor, who applied some remedy to the wound. He supposes that his subsequent troubles are due to this application; for the wound shortly took on an unhealthy action, and became converted into a large sloughing ulcer, which gradually extended until it occupied the whole surface of the foot, involving the deeper tissues and bones.

The tarsal bones, one after another, became carious; and the caries slowly and steadily advanced, until six of the seven bones had one by one dropped off; this destructive action continued for about six months, when it ceased, leaving the astragalus free from disease. Two months afterwards this bone also became carious, and dropped off, leaving a clean surface, which, in course of time, healed without treatment.

The parts continued sound and apparently healthy for a month, when ulceration commenced in the stump. It was

then that he sought admission into hospital, not so much as he afterwards confessed, from a desire to obtain medical advice, as from a hope that he would be supplied with a pair of crutches.

This ulcer was about the size of a rupee, presented a rough rugged-looking angry appearance, and discharged copiously a thick grumous-looking pus: with the exception of this ulcer, there was nothing unhealthy in the appearance of the stump, the ends of the tibia and fibula were well covered with skin and muscle, and but for some unevenness of surface, the stump was as good as if it had been left by a scientific operation.

A lotion of carbolic acid was applied to the ulcer, and bark administered internally. Under the use of these means the ulcer speedily assumed a healthy action, and healed in less than three weeks.

Remarks.—The question that naturally arises on a perusal of the above statement of this singular case, is, to what was the destruction of the whole foot due? The patient attributed it, and probably with some reason, to the remedies employed by the native doctor. What these consisted of it is impossible to tell, but whatever it was that originated the action, the destruction pursued its course unchecked for six months, then it became arrested; after two months it recommenced, and terminated in the loss of the only tarsal bone left. The parts then healed to break out again in a month, and the chances are that but for the treatment, the destructive action would have gone on and involved the structures of the leg. There was nothing in the man's general health with which this condition could be associated, or to which it could be attributed. The man was, as has been stated, notwithstanding the extensive disease of the foot from which he had suffered for nearly a twelve-month, in robust health when I saw him; and I understood that at no time did the state of his general health give him the slightest concern.

It appears to me to be a strange feature in the case, that during the extensive ulceration and destruction of the tissues, no hæmorrhage occurred. We know that in sphacelation hæmorrhage but seldom occurs, owing to the obliteration of the vessels prior to their involvement in the general destruction; but in this case, the diseased action did not appear to have partaken of the character of sphacelus, and it was one in which we might reasonably have looked for hæmorrhage.

ART. XXXII.—*A Case in which Death resulted from Peritonitis and Obstruction of the Bowels, caused by eating the fruit of the Guazama tomentosa.* By JOHN MURRAY, M. D., Superintendent Lunatic Asylum, Madras.

(Communicated by Inspector General Indian Medical Department.)

[*Note by G. Bidie, M. B., Secretary to Inspector General Indian Medical Department.*—The tree referred to in this case belongs to the N. O. Sterculiaceæ, all the plants of which are devoid of poisonous properties. It is said to be a native of South America, but if so, it must have been introduced into India at a very remote period, as it has long been widely diffused over the country. It is of rapid growth, and has rather pretty foliage, and hence was, at one time, rather a favourite tree for avenues, and for affording shelter in gardens. A description of it will be found in Wight and Arnott's Prodromus, Vol. I, p. 64. The old bark of the tree, Lindley tells us, is used in Martinique as a sudorific and for skin diseases, while the young bark, on account of the quantity of its mucilage, is employed for clarifying sugar. The wood is known as *Bastard Cedar*, and being light and pretty, is sometimes made into furniture. The fruit is an indehiscent, woody, five-celled capsule, extremely muricated, with hard club-shaped, rough tubercles. It contains a sweetish mucilaginous pulp, which is commonly eaten by natives, the capsule or husk being rejected. In this case, however, the unfortunate woman appears to have eaten the whole of the fruit, and as the capsule would be but little affected by mastication or digestion, it is easy to understand how, by mere mechanical action, a large quantity of it would excite a fatal amount of intestinal irritation.]

ON the morning of the 6th March 1869, a female lunatic named Sommakkah, aged 35, was found lying on her bed complaining of pain in her stomach. The patient had been for seven months under treatment in the Lunatic Asylum. She was suffering from mania, and was generally very noisy and troublesome to manage.

She had been repeatedly detected eating the fruit of a tree, the Guazama tomentosa, which grows in considerable numbers in the Asylum enclosure, and it was suspected that this

was the cause of the abdominal pain which she then complained of. A dose of castor oil, laudanum, and peppermint water was immediately administered, and towards evening the bowels were opened twice, and the pain seemed much allayed. At 9 P. M. that evening, and also at 2 A. M. on the morning of the 7th, she was visited in her cell. She no longer complained of pain, but said she was thirsty and asked for water, which she was in the habit of drinking in large quantities.

When her cell was opened by the Serjeant at gun-fire on the morning of the 7th, she was found lying dead on the floor. From the appearance of the body, it appeared likely that death had occurred during a convulsion. The body was rigid, and the hands tightly clenched, the mouth was firmly closed, the lips had been bitten by the teeth, and were bleeding.

The *post-mortem* took place at 7-30 A. M. On opening the abdomen, which was slightly distended, the peritoneum was found much inflamed, especially on the left side and over the ileum, where flakes of fresh deposits of lymph were observed. The large intestine was much distended and pushed altogether out of its normal position. The transverse colon, instead of occupying its usual situation, had been forced downwards alongside of the ascending colon, to which it was firmly attached. It was also united to the cœcum, where it formed a large pouch, and then ran obliquely upwards to the left side. It seemed at first sight as if intus-susception had taken place, but after a careful dissection, nothing of the kind was found. The colon throughout its entire course was completely filled with the husks and seeds of the fruit above mentioned, over a pound weight of these being collected. The mucous membrane was dark-colored and congested, and several patches of inflammation were observed.

The small intestine, especially the ileum, was much inflamed, but quite empty. The stomach was empty, small and contracted, and pale in color. The liver was highly congested, and weighed 2 lbs. and 10 oz. The gall bladder was distended with bile.

Head.—The external surface of the cranium presented a depression, at the junction of the parietal with the occipital bones. Internally there was a prominence on the right superior occipital fossa near its centre. The dura mater

was firmly attached to the inner surface of the cranium. The pia mater was congested, and peeled off easily from the convolutions. Underneath the pia mater there was a milky-like effusion observed over a considerable part, of both hemispheres. The brain was flattened at the part corresponding with the prominence in the occipital bone. The ventricles contained no fluid. The consistence of the brain and cerebellum was natural, weight 2 lbs. 4 oz.

Thorax.—Lungs both healthy.

Heart rather enlarged, left side muscular, right side thin and covered with fat. The cavities were empty.

A rather curious circumstance may be mentioned in connection with the case above recorded. For sometime previous to her death, a great intimacy was observed between the deceased woman and another female lunatic named Pothamah, a native of Calicut. This woman was admitted into the Asylum in January 1869, suffering from acute mania. She was generally very noisy and occasionally violent. Pothamah's language was Malayalum, while Sommakkah spoke only Telugu. They were unable therefore to converse with each other. Notwithstanding this, they became inseparable friends, always sitting together at meals and rarely taking any notice of the other patients. Immediately after the death of her friend, Pothamah became very low spirited, and cried a great deal, and soon afterwards a remarkable alteration was observed in her general behaviour. She was now perfectly quiet and respectful in her manner, and expressed herself willing to engage in spinning, and other light occupations; and it soon became evident that her reason was completely restored. She was discharged from the Asylum in September 1869, in full possession of her mental faculties.

Art. XXXIII.—*Cases in Practice (Medical).* By C. A. Andrews, Esq., Zillah Surgeon, Kurnool.

Epilepsia, Worms.

Chinnasawmy, Æt. 25, Mess servant. August 2nd 1867, brought to the dispensary in a comatose state, with stertorous breathing; pulse frequent, full and strong, skin moist, pupils contracted. It is stated that at 7 A. M. (three hours ago) he complained of giddiness and headache, which induced him to lie down; about 8 A. M. he had an epileptic seizure, repeated about every half hour without any interval of consciousness.

℞ Calomel. gr. x., Ol. Croton. ♏ i.
Antim. Tart. gr. ½, stat.
Enema terebinth.

Sinapisms to chest and soles of feet; head shaved, evaporating lotion.

12, *Noon.*—Remains comatose, fits more frequent, less severe, bowels moved four times by repeated injections, cannot swallow physic.

2 P. M.—Still comatose with contracted pupils, skin bathed in cold perspiration, pulse frequent and small. Fits continue every quarter of an hour. Enema of turpentine and assafœtida, lotion to head.

4 P. M.—Skin warmer, perspiration diminished, pulse slower and fuller, pupils still contracted, is restless, has fits at longer intervals.

℞ Calomel. gr. x., Ol. Tig. ♏ ii. stat.
Emp. Canth. Nuchæ.

8 P. M.—Fits ceased, bowels moved several times, passed five large round worms, still restless and comatose.

Calomel. gr. ii. once in three hours.

3*rd*, 2 A. M.—Consciousness returned, complains of vertigo and pain in the head; pulse small and frequent, pupils natural.

Cont. Calomel. et Lotio. Congee.

8 A. M.—Progressing favorably.

4*th.*—Passed more round worms; complains of heaviness of the head.

Ung. Hyd. to blister.

8*th.*—Discharged, well. This patient had never previously suffered from epilepsy, and has, I believe, remained well ever since. The cerebral disturbance appears to have been entirely due to the presence of worms in the intestines. There was no salivation from the mercury.

PELVIC ABSCESS.

Balaboye, Æt. 17, Hindoo, female. Admitted September 9, 1867, with a hard swelling in the mesial line of the abdomen, about three inches in breadth, and extending from the pubes to the umbilicus; there is another distinct and smaller tumour in the left iliac fossa; they are painful on pressure, no fluctuation can be discerned, uterus healthy.

History.—Had a guinea-worm extracted from the left thigh a few weeks ago, which caused an abscess that has only recently healed; the swellings in the pelvis appeared about the same time, and are probably collections of matter due to the same cause. Is in a weak anæmic condition.

℞ Ferri. Iodid. gr. i. ter die.

Liniment Hydrarg. to be rubbed into the abdomen. Full diet.

18*th.*—Tumour smaller and less painful, general health much improved. The abscess in the thigh has again opened.

Cont. medicine. Full diet. Poultice to thigh.

October 14*th.*—Improving in health, tumour daily becoming smaller. Continue.

November 5*th.*—The opening in the thigh has again closed; swelling in iliac fossa gone, that above the pubes much diminished. Is getting into very good condition.

Cont. Ferri. Iod.

11*th.*—The swelling above the pubes has also disappeared, and she is quite well. Discharged.

Epilepsy, Worms.

Anuntiah, Æt. 23, Hindoo, male. November 3rd, 1868, admitted with convulsive motions of the head, neck and left arm: the head and eyes are drawn to the left-side, and in constant motion; has lost the power of speech and deglutition, and can with difficulty protrude the tongue. It is stated that he was seized suddenly with giddiness this morning, fell down and became convulsed.

Turpentine enema, warm bath, blister nuchæ.

Vespere.—The enema brought away one round worm with fœculent matter; is less convulsed and able to swallow.

℞ Calomel. gr. v.
Ext. Coloc. gr. v. N. S.
Ol. Ricini ℥ i. mane.

4*th.*—Bowels freely open, no worms, convulsions have passed away; looks dull, eyes injected, tongue furred, pulse full.

Mist. Salin. co. ℥ ii. 3 hor.
Santonine gr. iii.
Ext. Coloc. et Pil. Hyd. n. s. s. P. Jalap. ℥ i. mane.

5*th.*—Passed seven round worms; is much better.
Continue saline.

6*th.*—Complains of headache and vertigo. Cont.

7*th.*—No headache; is pale and weak.

℞ Ferri et Quinæ Cit. gr. v. ter die.

15*th.*—Quite well. Discharged.

THE SANITARY CONDITION OF COOLY EMIGRANTS IN CEYLON.

FROM some copies of the *Ceylon Examiner* recently sent to us, we gather that the planter mind has been a good deal exercised of late, on the subject of the treatment which Indian laborers in the coffee plantations of the neighbouring isle receive from their employers. Emigration from Southern India to Ceylon has for many years past existed without any fostering care or special encouragement of the State. The Ceylon planters want labour at certain periods of the year, and offer a fair price for a fair day's work. The Madura or Tinnevelly ryot who has got into the Soucars' books through a course of adverse seasons, or domestic misfortunes, thinks he may as well earn a little money, when his own fields remain dry and barren. He leaves his home concerns to be managed by his women-kind or relations, crosses over to Ceylon, and finding employment, soon hoards enough of money to relieve him of his pressing claims; so when work begins to slacken on the coffee estates, he returns to his own home, and with the money he has saved, pays his debts, or buys bullocks for the cultivation of his family holding. It is obvious that a system of emigration conducted in this manner must be a mutual benefit to both countries. The Ceylon planter gets willing labor ready to his hand when he wants it. The Indian laborer gets better terms for his labor than he could procure by staying at home. He accumulates wealth, and experience of men and manners, and is a more intelligent subject when he returns to his native country, and consequently a better citizen, than the man who has never left his paternal hamlet.

But we are reminded that there is a dark side of the picture too. Statistics inform us that the yearly average of arrivals from our Southern districts of India in Ceylon, is 57,856, and that the average

number who leave the country is 33,595. The excess of arrivals over departures is 41·9 per cent. Now there has been considerable discussion in Ceylon as to what becomes of this large excess of immigrants. Do they die in Ceylon, do they settle in the country, adopting it as their home, or do they return to India by routes which escape the notice of the department framing statistics of the arrivals and departures ? So far as we can see from a review of the correspondence, all these causes have been more or less concerned in the creation of the discrepancy between the immigrants and emigrants.

The question, whichever view we adopt, is a very important one, as there can be no doubt but that the supply of Ceylon with labor involves a very heavy drain on the population of the Southern Provinces of India, and is therefore a subject of interest to the Madras Government.

We may remark with reference to the alleged excessive mortality of the coolies that the charge is supported by a certain amount of evidence, but that the evidence is by no means conclusive.

The figures quoted by Dr. VanDort would apparently show that, after allowing for those who settle and become a portion of the resident Tamil population of the Island, there remains about one out of every four immigrants to be accounted for. If we could be quite sure that the proportion of settlers more or less permanent was not increasing, and that no persons left the Island unnoticed, it would perhaps be not illogical to assume that twenty-five per cent. of the immigrants died in Ceylon. But against this view of the case there is the important fact that emigration from India to Ceylon is entirely voluntary, and that the emigration of whole families from year to year is decidedly popular, and in harmony with the aspirations of the people. That the desire of gain influences the Madras cooly, as it does every

other person who expatriates himself from home and country, is unquestioned. But if the climate of Ceylon, or the treatment received by the cooly were inimical to his well-being, it is quite certain that the labor market of Ceylon would not be voluntarily filled by the surplus muscles of India, as it now is.

The report of Dr. Vandoort bears unquestionable testimony to the fact that the diseases of the Madras cooly in Ceylon, are diseases of innutrition. The cooly's virtues indeed become his vices. In his desire to hoard money to spend on his own home and people, he denies himself the actual necessaries of life, and falls into that low anæmic condition of health, to which we give the generic name of scurvy. The Madras sepoy on foreign service behaves in precisely the same manner. The Government grant him a liberal food ration in addition to the pay he receives on home duty, but he pockets the whole pay, and will, if he can, sell half of his rations. In attempting to live on an inadequate food supply, he loses health and strength. The mortality and invaliding due to this cause, cause great burdens to the Pension Establishment.

Dr. Vandoort's estimate of the moral nature of the Indian cooly is not very flattering. A more intimate acquaintance with the people, their thoughts and habits, would no doubt lead him to modify some of his conclusions.

The statements that the cooly is "purely sensual in his habits," and that his sole motive for exertion is "the indulgence of his animal appetites" are not only exaggerated, but untrue. It is not the characteristic of a sensual or animal nature that he should leave his home and all he holds dear, work hard, and live sparingly with the view of bettering himself or those belonging to him. Dr. Vandoort is especially angry with the cooly, because he will, if he can get the garbage for nothing, eat "putrid meat, entrails,

reeking hides, roots, leaves, &c." and even "exhume the buried carcase of a sheep to feast on its decomposing remains." It does not seem to have occurred to Dr. Vandoort what his own cravings for animal food would have been had he lived upon cooly's ordinary fare. This ordinary diet in all the plantations, we see, is rice, vegetables, dhall, and condiments. Some no doubt eat animal food when they can get it, but many prefer denying their appetites this luxury, unless they can obtain it, as Dr. Vandoort says they do, by eating meat that has been considered unfit for sale as food. It must be remembered that the Dravidian races in South India are all fish and flesh eaters by nature. They have never been so completely Hindooised, as to refuse mutton, goat's flesh, game and fish, whenever they can get them. In their own country too, their food is not the soft, delicate, but innutritious rice of the effeminate Cingalese, but a hardy cereal grain, more nearly approaching to wheat or barley in its sustaining power. The ragee and cumboo eaters of Madura and Tinnevelly are the cultivating classes, the very people who emigrate to Ceylon. Here indeed we seem to get a clue to the liability of the cooly to suffer from scorbutic disease. He not only transfers himself from a dry arid district to a moist hill climate, but he changes his ordinary food, *ragee*, for *rice*, and with the latter he neglects to provide the flesh-forming complement of animal food, which enables a rice-eating people to sustain severe bodily labor. The physiological aspect of the question is precisely that of the prisoners in the Madras jails, who, previous to a change in the dietary in 1865, died in the ratio of 120 per thousand of strength per annum, chiefly from the identical diseases which to this day afflict the Indian laborer in Ceylon.

Mr. Murdoch, the Emigration Commissioner, has suggested that the practice in force in the Mauritius

and West Indies, of issuing a part of the pay of coolies in the shape of rations, should be followed in Ceylon, but the planters are, and we think with reason, opposed to any such interference with the habits and customs of their employés. The various members of the Planters' Association who have recorded their views on the Emigration Commissioner's proposals, deny that the cooly is so morally black as he has been painted by Dr VanDort. They bear testimony to his orderly habits, his self-denial, and frugality. They deny that any large mortality occurs on the estates, and refer to the fact that only ninety deaths occurred in hospital in the centre of the largest planting district. It is stated too that the independent shops are well supplied with provisions of every kind, and that no cooly need eat filth, for want of good and wholesome food. This is no doubt the truth, if not the whole truth. We do not see from the planters' letters that any of them have a due appreciation of the physiological problem involved, viz., are the rations which the coolies supply themselves with adequate to the maintenance of healthy function of the body? The general character of the diseases treated in the hospital under Dr. VanDort's charge points most clearly to the fact that there is defect in the dietary, and it seems quite possible that the defect consists in the use of rice as a staple, without an adequate proportion of nitrogenous food to compensate for the deficiency of rice in that particular. How far this defect can be remedied by planters it is not for us to say. But it should be remembered that the Madras Government, which supplies rations to Native troops in Burmah, independently of the amount of pay it covenants to give, cannot keep the men healthy, in spite of the humane endeavour to feed the troops well.

The Indian Government has fallen into the identical error of the Ceylon planters in estimating a rice ration to

be enough to maintain health and strength. The ration errs on the side of liberality as regards quantity. The sepoy fills his stomach with rice, and what he can't eat he sells. Physiology shows us that no human being can expend force without having the equivalent of that force restored to him in the shape of food. Rice, without meat or milk, does not supply the force necessary for the daily waste and up-keep of the bodies of hard working men. If they attempt to work hard on such a diet, they break down, and the employer of labor ceases to get full value for his money. In this aspect of the question the dietary arrangements of the laborers on his estate do most seriously concern the planter. From the care and intelligence with which the Ceylon planters have discussed the question in its other bearings, we shall be pleased to see that they seriously consider it in its physiological aspect too, and our own Government, we think, is bound to examine into the question, whether the mortality, as alleged, is so considerable amongst its subjects the temporary emigrants to Ceylon, and if so, whether something might not be done to improve the sanitary condition of so useful and enterprising a class of people.

SALE OF POISONS.

Two cases of suicide by means of Cyanide of Potassium have occurred recently in Madras; one of which, at least, illustrates the fatal facility with which drugs of the most virulently poisonous nature can be obtained in this country. A respectable woman, irritated by some family squabble, sends out to the bazar for "rat-poison;" her messenger receives without question a lump of cyanide of potassium; she swallows about ten grains of it, and dies. This case only places

in a somewhat stronger light than usual the necessity, which has long been apparent to officers whose duties bring them most frequently into contact with suicidal and homicidal crimes, of restricting by law the sale of poisonous drugs. The arguments in favor of such restriction are *primâ facie* so numerous and strong, that it is difficult to understand why, in days like these, when the *lues legislativa* is so virulent and so widely-spread—when Indian legislators are accused on high authority of unnecessarily heaping Act on Act, and amendments on laws which have not had time to be broken—nothing has been done to diminish the formidable total of deaths by poison. Suicide and homicide are universally recognized as offences against society; the proportion of these crimes effected or attempted by means of poison is, in this country, very large; and the number would, according to all analogy and experience, be diminished by any measures calculated to render the obtaining of poisonous drugs more difficult than it is; finally, in Europe, where the task is incomparably more difficult than in India, owing to differences in the nature of the Governments, to the greater number of deleterious drugs required for arts and manufactures, and to the more numerous and more powerful interests opposed to interference with freedom of sale, the law restricts the sale of poisons, effectively and beneficially. It is to be supposed, that when the case for restriction is so strong, the difficulties standing in the way of carrying it out by legislative means must be, or must appear to the legislature to be, very formidable. The subject has not been overlooked through inadvertence, for it was brought prominently to the notice of the Madras Government by the Coroner of Madras, and by them to the notice of the Government of India. What the difficulties are or appeared to be, how weak the objections are, how easy the remedies demanded may be applied, will best be made clear by

examining and remarking on the correspondence, &c., elicited by the representation of the Coroner to which we have referred.

In December 1863, a Coroner's jury put on record an opinion "that the sale of poisons should be regulated by law, and that some restriction should be put on such sale. From the evidence in this case, it appears that any amount of opium can be bought openly in the bazaar by any one." The Coroner, as requested, brought this presentment to the notice of the local Government. The importance of the subject was fully recognized. The Order on Dr. Urquhart's letter states that the "Governor in Council considers it very desirable that the sale of such drugs should be restricted by law;" directs that the expediency of introducing a Bill for the purpose should be considered in the Legislative Department; and points out that provisions for restricting the sale of poisons were introduced into the Madras Police Bill of 1856, but struck out during its passage through the Legislative Council. A short Bill was drafted accordingly, empowering the Local Government to publish lists of Poisonous Drugs which it should be unlawful to manufacture or to sell or to keep for purposes of manufacture or sale, without a license from the Commissioner of Police in Madras, or the District Magistrate in the Mofussil, under a penalty of six months' imprisonment, or fine not exceeding Rupees 200, or both. It required the licensed sellers to record each sale of such drugs, with quantity sold, ostensible purpose of purchase, name of purchaser and other details, the entry to be signed by the purchaser if he could write. The seller must know the buyer, unless the sale was made in the presence of a third party known to the former, knowing the latter, and willing to guarantee the purchaser's innocence to a certain extent. "No persons shall sell poisonous drugs to any person under the age of

sixteen years," was a most important provision of this Bill. Compounding the prescriptions "of a legally qualified medical practitioner, or a member of the medical profession," (between whom there appears to be a subtle distinction known to lawyers), was not restricted, except by the necessity of possessing a license, and wholesale transactions were similarly exempted. It appears to us that this Bill, if passed into law, would have fully answered its purpose of checking both suicidal and homicidal poisoning; that it would have been oppressive to no one, except a poisoner, and that if the List of Poisonous Drugs were carefully prepared, (on which point we shall have more to say hereafter), it would have worked smoothly and easily. However, the Local Government were so convinced of the importance of the measure, and of its being a matter of imperial rather than of local interest, that they determined to submit the question for the consideration of the Supreme Government. The subsequent history of the matter we must defer till our next number.

REVIEW.

RECENT CONTRIBUTIONS TO THE LITERATURE OF ASIATIC CHOLERA.

1. *Epidemic Cholera in the Bengal Presidency.* By JAMES L. BRYDEN, M.D., Surgeon Bengal Army, Statistical Officer attached to the Sanitary Commissioner with the Government of India. Calcutta: Office of Supt. of Govt. Printing. 1869.

2. *A Treatise on Asiatic Cholera.* By C. MACNAMARA, Surgeon to the Calcutta Ophthalmic Hospital. London: John Churchill and Sons. 1870.

3. *Statistics of Cholera.* By EDWARD BALFOUR, L.R.C.S.L., Deputy Inspector General of Hospitals, Madras Army. 2nd Edition. Madras: Athenæum and Daily News Office. 1870.

4. *Address to the Bengal Branch of British Medical Association.* By J. MURRAY, M.D., Inspector General Indian Medical Department. Calcutta: *Indian Medical Gazette,* March 1870.

THE International Sanitary Conference held at Constantinople in 1866, if it has not been productive of all the good expected of it, has been the means of stimulating the production of a new crop of writings in illustration of the natural history of Cholera, and particularly of calling forth the observations and experience of those who should be the best qualified to elucidate that which is dark and obscure in the nature of the modern pestilence we call by that name. Medical men in India, and especially those who labor in the fields of endemic and epidemic distribution, are in a peculiar degree placed in positions which enable them to speak with authority, provided that they will confine themselves to a description of the phenomena actually coming under their own observation, and avoid the not unnatural temptation to force an interpretation of the facts they have noted, which the facts

themselves do not warrant. The appearance within a short space of time, of works like those of Bryden, Macnamara, Balfour and Murray, is a practical answer to the reproach that the laborers in the Indian field of observation have of late years been doing nothing to clear up the doubts and difficulties connected with the better understanding of the true nature and history of Cholera.

The work of Dr. Bryden we have placed at the head of the list, not only on account of priority of publication, but because it is a remarkable, and probably the most remarkable example in recent times, of the uses to which figures may be applied in dealing with the phenomena of cholera.

Dr. Bryden's book is "published by authority," and we infer, from its size and prolixity of detail, at the cost of the Indian Government. It contains 245 closely printed foolscap pages, with an appendix of tabular statements, maps, diagrams, &c., occupying nearly a similar amount of paper space. In his introduction, Dr. Bryden tells us that his desire has been to study cholera as an object of natural history; and we learn that his qualifications for the task are an intimate acquaintance with the recorded statistics of the army and jail populations of Bengal and Upper India of the last fifteen years. We gather also that the immediate publication of the report in question is due to the Commander-in-Chief of India, who, finding less advantage than was expected from moving troops into camp in epidemic seasons, desired to be put in possession of the guiding principles on which such removals to camp should be or should not be practised. If Dr. Bryden's explanations have satisfied the Commander-in-Chief on this point, nothing remains to be said, except that much irrelevant matter has been allowed to complicate the reply. Dr. Bryden has been further incited to the production of his book by the impulse given to the doctrine that cholera spreads chiefly by human intercourse, by the reports of the International Conference, and also of various Sanitary Commissioners, especially of the one who "alleged" the late outbreak of cholera in North India to have been due to the propagation of the disease by the pilgrims dispersing from the Hurdwar Fair of 1867. It is to be regretted that Dr. Bryden, in his haste to controvert theories which he regards as occupying the place only of secondary truths, should have given so little attention to the arrangement of his own very important conclusions.

His style of writing is labored, and often wanting in clearness. As a fact, we know several persons of average powers of intelligence, who have attempted to master the author's meaning, and have given up the task, after repeated trials, in despair. Now this is a very serious defect in a book, and one that the reader has just cause to complain of. An author, we hold, if he has anything to say that is worth the saying, is bound to consider the ability of the reading public to comprehend his meaning, and to put his thoughts into language that shall be intelligible. Dr. Bryden's book, notwithstanding its defects, is undoubtedly a work that is worth studying. The author has evidently been so replete with facts and figures, that the difficulty has been in arranging them, with clearness and satisfaction, even to himself. As a laborious and painstaking laborer in the field of medical statistics, Dr. Bryden has perhaps few equals. The statistics before him have enabled him to take a comprehensive survey of the phenomena of cholera epidemics, especially as regards the history of the disease in Bengal, the North-West Provinces, Punjaub and Oude; and the conclusions drawn by one who has had so wide a field of observation, whether we agree with them or not, are entitled to a respectful consideration, especially when we are enabled to understand clearly what those conclusions are.

If we should fail to convey to the reader a clear idea, in outline, of Dr. Bryden's views about cholera, our failure must be attributed to the obscurity of the author's language, and not to a desire to deal unfairly by him.

Dr. Bryden has made an attempt to illustrate the influences of certain natural phenomena on cholera, and to study cholera as an object of natural history. He thinks that recent observers have paid too much attention to cholera in its immediate relation to Man, and that they have been too much inclined to subordinate facts as they occur to the theory of the distribution of epidemic cholera by human intercourse, and of its multiplication in the economy. He, without denying the possibility of such a mode of distribution, looks upon it as a *secondary* or subordinate fact, only, and does not elevate it to the place of a "primary truth." In regard to the position he has taken up on this question, Dr. Bryden shall speak for himself.

"He who holds as his radical assertion that cholera is "essentially dependent for its growth and spead on its relations to man,

and declines to entertain the doctrine of aerial transmission, and reproduction in the soil, cuts himself off from what I believe to be the primary fact, which must be received before any adequate idea of the natural history of cholera can be taken in. Holding fast to this as a primary truth, we pursue it, and we carry on the study naturally up to the point at which we are led to enquire into the relations of cholera with the human race. Those who say dogmatically that cholera is an object which has no relations except to man, and that therefore cholera must be transmitted from man to man, and must be multiplied in the human economy, and that the materies so multiplied must be the means of infecting others, cut themselves off from what I believe to be the true basis of all enquiry."

"Those who do not are prepared for an investigation of these questions, and are not driven into a corner in which they must take their stand or surrender their opinions. Step by step they are led on to recognize that it is an object, and not a conception that is being studied! A thing appreciable as if it had bulk or color to make its presence evident to the senses, a thing with the attributes of a vitalized organism, and with appreciable objects. Recognizing this individuality, and knowing as a *primary* fact that the cholera germ is earth-born, and aerially conveyed, they are not prohibited from pushing enquiries into the behavior of this object, when man, to whose system this object acts as a deadly poison, is concerned. When the conveyance of cholera from man to man, or from place to place by fomites is proved, the fact is admitted; and the collection of evidence corroborative of such occurrences is an essential, although a secondary portion of a complete investigation into the natural history of the cholera miasm. When it is said that a cholera-stricken stream of pilgrims pass off cholera to travellers or others who meet it, the fact is not disputed, because it is known to be indisputable. When it is asserted that cholera is multiplied in the economy, and that the dejections are the medium by which the object, when multiplied, leaves the economy, and that a body of cholera patients is a focus of cholera, while the facts of fifty years' experience in our largest cholera hospitals, recorded by our best observers, negatives the belief, that as a rule those already suffering transmit cholera to those around, the door is left open for further enquiry, from a conviction that multiplication in the economy may be a fact, although not of the practical significance which those who hold the exclusive doctrine are compelled to attach to it."

This lengthy extract will serve to show that Dr. Bryden's ways of thinking and observing are not the ways of most men who pursue scientific investigations. He does not attempt to reason from the individual fact up to the general law, but he wishes to show how the individual fact will find a place in a general system, and the relation of the

general law governing the whole series of facts, to the particular fact in question. His process is a purely deductive one, and he claims that his "primary fact" of cholera being earth-born and aerially conveyed, shall be taken as proved; whereas we need hardly say that the so-called "fact" has but little evidence in its favor, and that it is in the present state of the inquiry incapable of proof. It is obvious that advantage may arise from studying both the general and special phenomena of cholera. Dr. Bryden, we think, places too much reliance on what he calls *primary* truths, while other observers have fallen into the opposite extreme of making too much of what he terms the *secondary* phenomena. Truth, in a matter of this kind, can hardly be regarded as primary or secondary. It lies somewhere between the two extremes, and those who approach it by the deductive or inductive method, may, if they seek diligently, discover the true relation of one fact to another. Dr. Bryden's primary truth relating to cholera, as he interprets it, is that cholera is an earth-born miasm, living its own life and dying its own death in accordance with its own nature, the laws of which may be studied. This miasm, or object, or whatever we choose to call it, is confined to its own area (the area of endemicity), until it is borne without by the moist air of the monsoon. Cholera so wafted out of its natural home, will be guided in its progress by monsoon influences, and any place within monsoon limits is liable to be invaded. After a province has been invaded, cholera may temporarily appear to die out, and lie dormant therein, until atmospheric or seasonal changes shall cause it to bud forth anew and pursue its life history for weeks or months. This latter phenomena Dr. Bryden characterizes as 'Reproduction.' An epidemic may extend over years. It has, Dr. Bryden says, "a true limit in time." "In virtue of what cholera is, as an object of natural history, its epidemic life is made up of a certain number of different, and successive renewals, reproductions, or revitalizations" in each year of its continuance.

Now without going into the question of the accuracy of these statements, it may be well to recall the fact that Dr. Bryden, though professing to be shaping his conclusions according to the statistical data before him, starts in reality with a pure assumption as his "primary truth," around which all other truths are expected to group themselves. This assumption is that cholera is earth-born and aerially con-

veyed. It is hardly necessary to urge that cholera is earth-born, because no one will dispute the statement, in so far as that the manifestations of cholera are always witnessed in connection with man and animals inhabiting the earth. But Dr. Bryden does not limit the term earth-born to the restricted sense in which other persons accept it. He believes cholera to be capable of generation and of development, if we understand him aright, independently of man, or animals. He holds that it is allied with the miasms of influenza and malaria, and that it has nothing in common with those of typhus or small-pox. An earth-born cholera, he declares, is spread over the country by the prevailing winds. When the winds containing this deadly poison pass over a country, man, if he be predisposed to receive the miasm, suffers from the disease we call cholera. The mere fact of human creatures being in the way of these winds is unfortunate for the individuals concerned, but they may lay this consolation to heart, that the poison is according to Dr. Bryden just as virulent in uninhabited tracts of country, only that there are no representatives of humanity to experience its effects.

Now, although this may be partially or wholly true, Dr Bryden has not adduced one tittle of evidence in favor of his "primary truth," that cholera may exist and may pass through all the phases of its life's history, independently of man. There is a large amount of evidence on the other hand, collected not only in India, but in every country which in modern times has been visited by the pestilence, that proves, as clearly as anything can be proved, that cholera is a disease communicable from man to man, and that when it oversteps the geographical limits of its natural home, human intercourse plays a most important part in its epidemic development. So far from this fact (which Dr. Bryden is forced to admit) being placed amongst the secondary phenomena, it should in any scientific enquiry be elevated to the position of a primary truth, for it happens to be the one circumstance amongst all others, regarding which every investigator, in every country, whether he pursue the deductive or inductive method of enquiry, is agreed. Many years ago, when the old battle was going on between the contagionists and the non-contagionists, it is quite true that human influence in the spread of cholera was denied, and particularly by a Mr. Jamieson, who compiled the Bengal

Report on Cholera in 1820. Of this gentleman Dr. Copeland (Dic. Prat. Med. Vol. III.) remarks:—

"Whilst he reasoned in an extremely loose manner against the existence of an infectious property having been evinced by the disease, and without furnishing proof of its absence, actually adduces evidence of that property which he is endeavouring to disprove.

"Mr. Jamieson, instead of appearing as the editor, or publishing reporter of the opinions sent to the Calcutta Board, states his own views, endeavours to explain away those which are different from them, and thus the publication which in the title page professes to be a report, conveys not a single line of information from any one on the Bengal Establishment except this writer himself."

Jamieson is the one author on cholera that Dr. Bryden thinks it worth while to quote with approval in regard to the aerial transmission of the epidemic form of the disease, and it behoves us therefore to examine somewhat closely the basis on which this other "primary truth" to be taken for granted rests. Dr. Bryden is continually asserting the power of meteorological influences in the transmission of the cholera poison, and we are never left a moment to forget the importance he attaches to such influences; but strange as it may appear, he has brought forward none but the most loose and commonplace of assertions in favor of the view. At page 65, a diagram is given which professes to illustrate "the relations of the area of the Bengal Presidency to epidemic influence in the months from June to September." According to this diagram, the south-west monsoon as a south-west wind is felt only so far as a line extending across the centre of India, from Cuttack to Ajmere. The second province influenced by the same monsoon, is the country lying to the east of the Bay of Bengal, including Cachar, Assam, Chittagong, and Burmah. The third and fourth divisions or provinces, appear from the diagram to be immediately under influences from the Bay of Bengal, that is, if we understand the argument, the winds prevailing over this tract are deflected from their north-eastern course, and made to pursue a north or south-westerly direction. In other words, the monsoon wind, as it reaches Oude and Cawnpore, is a south-east, instead of a south-west wind. If this be the meaning of the diagram, then we have no hesitation in stating that Dr. Bryden is bound to prove his case by the construction of meteorological diagrams, showing the general course

and direction of the winds during the months in question, within the special "provinces" he has mapped out. He has not done so, and so far as we can see, the book, which lays so much stress upon meteorological influences, does not contain a single meteorological register, explaining the direction and force of the wind, at any one of the stations for which Dr. Bryden has framed his statistics.

To prove the agency of seasonal winds in the spread of cholera, it behoves Dr. Bryden, or those who support his theory, to give meteorological diagrams showing not only the force and direction of the wind in one place, but in many places along the line of progress, and the connection of such a wind with the development of cholera. The rate at which wind travels admits of calculation; and if Dr. Bryden can show any connection between the velocity of monsoon winds and the spread of cholera, in the districts over which the wind blows, we are prepared to admit that the facts would demand very careful investigation of the theory; but Dr. Bryden has produced no such facts. The subject is no doubt a complicated one. A wind that blows, say with a velocity of 300 miles in the 24 hours, on the western coast of India, may diminish much in velocity before it has travelled half way across the continent: it may be deflected from its straight course, or repelled by stronger gusts coming from other quarters.

A chain or net-work of meteorological stations over India would, however, enable all these disturbing elements in aerial currents to be appreciated at their worth. We want, in fact, what Mr. Pogson terms the "resultant velocity" of winds expressed in reliable diagrams. The wind that has passed over Calcutta on one day, ought to be shown in its progress the next day, and the next and the next, and the same with all of the regular monsoon winds. No generalization on a subject like this can be of the slightest value, which is not based on the recorded observations of individual stations, conducted on a defined system. Dr. Bryden (p. 91) states he cannot be expected to supplement his generalizations "by the details of stational meteorology," but we, on the contrary, hold that he is bound to show us the facts on which his generalizations are formed, and that we are at perfect liberty to decline the generalizations until the facts are produced. The *onus probandi* is with Dr. Bryden.

Our author disputes the fact that cholera ever advances

against the wind. This in fact constitutes one of his major propositions. He says (p. 76.)—

"The prevailing wind is the agency which directs the course of an advancing epidemic, and determines its limitation in geographical distribution: the assertion that cholera may advance against a prevailing wind is contrary to fact."

Now, this is a strong statement, and one that should not have been made without sufficient evidence in its justification. It is a perfectly well-known fact that the epidemic cholera of 1818 (which, with all his theories about "dormancy," and "reproduction," Dr. Bryden must admit to have been an invading cholera,) did in more parts of India than one, travel against the current monsoon wind. We infer that Dr. Bryden must have consulted all well known authorities within his reach, and that amongst other papers, the Madras Cholera Report of 1824, drawn up by Dr. W. Scott, must have been available to him. Dr. Scott gives a map of Southern India, with the dates of appearance of cholera at various places. Thus the epidemic of 1818 reached Nagpore on 15th May 1818, when the weather was excessively hot and dry, with east winds blowing. At Jaulnah, where a detachment had arrived from Nagpore at the end of June, cholera broke out on 3rd July, the wind for some two weeks previously blowing "steadily from the south-west."At Punderpoor (still to the south and west), it appeared on the 14th July amongst the pilgrims, causing great mortality. At Poonah (in the direct line of south-west monsoon from the coast to Nagpore), it appeared on 30th July, and at Bombay on 14th August.

Now, in this instance, cholera did travel in direct opposition to the prevailing monsoon winds from Central India to the Western Presidency. The fact is simply beyond dispute, and in itself is a complete refutation of the positive assertion of Dr. Bryden. We may give one other instance from the same record. Cholera pursued its way down the Coromandel coast in 1818, from the district of Ganjam. There is reliable evidence of its epidemic presence at Aska on the 28th April. This was the season of strong southerly winds. On the 15th May it had advanced southward to Vizagapatam, where the air was "loaded with humidity," which, seasonal regularity being presumed, could only have come from the south. At Masulipatam, still further south, it appeared in the Jail on the 10th July, but not in the town until the 20th. It had reached the eastern extremity of the

zillah of Guntoor by the end of July, beginning, it is stated, "with the south-westerly rains," though the cholera in this direction was travelling from north to south. It took from 2nd August to 5th October to traverse the length of the Nellore District, about 180 miles, and all this time the advance was steady against the south-west monsoon. The first authentic case occurred in the town of Madras on the 8th October. About this time the monsoon was changing. On the 5th the wind was south-east, on the 7th north-west, where it continued until the 12th. From the 12th to 15th "variable." From 15th to 23rd south-east. The north-east wind commenced steadily on the 23rd, and a violent storm occurred on the 24th. Notwithstanding the help of the N. E. wind, cholera travelled no faster to the south than it did when it had the wind dead against it. Thus it took five days to reach St. Thomas' Mount, and the same number of days Poonamallee, the one eight miles south-west, and the other ten miles west of Madras. It did not reach Cuddalore, about 100 miles south-west, until 14th November, although the wind from the north-east must have been moving at the rate of 200 miles a day from the 23rd October. Its progress southward and westward was never greater than that of ordinary human travelling. It reached Salem on 22nd November, and Coimbatore, 100 miles further to the south-west, on the 30th. The extreme south of India, Tinnevelly and Trevandrum, were only reached early in January 1819, and from these points it made its way to the adjoining northern coast of Ceylon. We have referred back to this record, because there can be no dispute in terms, whether the cholera was a new "invasion" or a "reproduction." The admirable and philosophical report of Scott leaves no room for doubt on the subject, that the cholera of 1818, if not absolutely a new disease, was an epidemic invasion of a very well defined type, a type in fact which may be looked for in vain in the present day, when the toes of one epidemic tread so closely on the heels of its predecessor, that their distinctive characteristics are not easily traced.

Dr. Bryden, in his large generalisations on the subject of aerial transmission of cholera, is undoubtedly led into the making of statements that are not wholly warranted by facts. In referring to the cholera of 1860, as it affected the Central Provinces, he observes (at p. 4). We are "told of the "affection of the Central Provinces from the pilgrim shrines of "the locality in 1860 and 1864-65. The investigator, on a

"wider basis, recognises the cholera of 1860 as a great epide-
"mic, covering India from the frontiers of China to the mouth
"of the Nerbudda, and the epidemic of 1864-65 as a great
"cholera spreading from the Bay of Bengal to the shores of
"the Atlantic." This statement is apparently called forth to confute the "narrowness of view" of the author of the Madras Mortuary Reports for the years 1860 and 1864, in which Mr. Cornish adduces the fact that the pilgrims at Mahadeo in Central India *did* distribute cholera in those years. Dr. Bryden does not deny the communication of cholera by pilgrims, but he urges that these were wholly subordinate phenomena, and that the invasion of the Central Provinces in 1860 was due to a wide-spread aerial something "invading" from the south-east. But it so happens that there are no facts whatever to warrant the view that the invasion of the Central Provinces in 1860 occurred from the south-east or east. Instead of invading from the "borders of China," the earliest account of cholera in Central India is from the Nerbudda valley, the last place it reached according to Dr. Bryden.

The first prominent account we get of cholera in the Central Provinces in 1860, is connected with the history of the pilgrims at Mahadeo, amongst whom it must have appeared about the 20th February 1860. This place is some miles to the north of Nagpore, and as Dr. Bryden's tables show that no cholera appeared in the Jails of Raepore and Chandah to the eastward until March and May, it is quite clear that there are no facts to warrant the assertion that the cholera invaded the Central Provinces from the endemic area to the south-east in that particular year.

Dr. Bryden, in his wider range of observation, dismisses the subject thus: "To the local observer these appear as epidemics of which he is the centre." Now, the "local observer" in the case of the Madras Mortuary Reports, had no more "local" knowledge of Nagpore than Dr. Bryden himself, but he had the independent testimony of those who were on the spot, and the opportunity of comparing their several accounts of the phenomena that took place, and as the facts stated by Dr. Bryden tend to throw doubt on the real nature of the outbreak of cholera in Nagpore in 1860, we shall discuss the matter at some length, aided by official documents lent to us for the purpose of elucidating the truth.

The most complete narrative of the cholera which attacked the pilgrims of Mahadeo in 1860, is drawn up by Dr. W.

Arnold Smith, an eye-witness of the facts he relates. Dr.Smith was in medical charge of a battery of artillery returning from Saugor to Bangalore via Nagpore. In his Annual Medical Report for 1859-60 occur the following particulars.

"The company was attacked by epidemic cholera on the "march between Saugor and Kamptee. The disease made "its appearance in our camp on the morning of 26th February "1860, at a village name Lodikera, three marches on the "Kamptee side of Chindwarra. The company was marching "under an escort of a troop of Her Majesty's 17th Lancers, "en route from Saugor to Kamptee, and previous to the above "date there had been little or no sickness in our camp. "On the morning of the 24th, we marched to Ramakona, de- "scending the Tarra Ghaut,an elevation of about 1,500 feet. "A violent storm of thunder and lightning, accompanied by a "heavy fall of rain, overtook us soon after leaving the "camp ground, and many of the men got wet. Near "the top of the Tarra Ghaut our detachment came in "contact with a large party of native travellers, proceeding "southwards from a place called Mahadeo, a village near "Chindwarra, noted for a celebrated Hindoo temple, and "visited by thousands of natives at that period of the year. "The multitude had just broken up,and were dispersing them- "selves to their various homes over the whole face of the "country, and our line of march was choked by these people "and their carts and families. It was not many minutesafter "coming in contact with these avellers that we noticed that "some epidemic was raging amongst them, which proved to "be cholera, and as we marched onwards, we passed "a great many newly made graves,and passed numbers "of these unfortunate beings dying by the road side. It "was ascertained that these people had been travelling on "our line of route for two or three days (*i. e.*, from the "21st February) from the point at which we met them, "and that the disease originated amongst them at Mahadeo.

"Cholera was now in our front and rear, and as it was im- "possible to prevent our camp-followers from mixing with "these people as they moved along, a visitation from the "disease was almost looked forward to as a certainty in our "camp. However, our camp grounds were now chosen with "more than ordinary care, as far removed from villages as "possible, and at some distance from the road. The greatest "care was taken in the selection of water, never allowing "these pilgrims to halt near the camp, or even at the stages

"reached by us. Our camp remained free from disease on that "day, but our next march to Lodikera(26th)again brought in "us contact with these unfortunate people,*who were hurrying* "*forward at a rapid pace,* travelling day and night, and "lining the road with their dead. The scenes witnessed by "the detachment on this march were disgusting in the "extreme. Every bend of the road brought us to a corpse "either lying where it had fallen, or half concealed beneath "a heap of stones. Others were half eaten by wild animals, "while the effluvia arising at various points of the road, may "be better imagined than described. *The disease commenced* "*in our detachment while on this march.* A man of Her "Majesty's 17th Lancers, and on arrival in camp one gunner "of the company was attacked, and several native followers "were brought into camp, who had been attacked on the line "of march. Our route lay direct to Nagpore, but finding that "the majority of these pilgrims were proceeding in that "direction, *we struck off on the following day on the road* "*to Kamptee,* upon which very few were travelling. The "disease continued to increase among the camp-followers "till four arrival at Kooradee on the 29th, a village four "miles to the north of Kamptee. During this time two more "deaths had occurred among the Europeans of our escort, and "out of 37 admissions amongst the camp-followers, eighteen "deaths had occurred, and a great many natives were missing. "For the last three days our line of march had been perfectly "free from the pilgrims, *and the villages were quite healthy.* "We halted at Kooradie six days, changing ground every "other day, and after the 3rd March no fresh admissions "occurred. The remaining portion of the march to Banga- "lore was accomplished without another case of cholera."

In commenting upon the above facts Dr. Smith says: "I "think there can be but little doubt that the disease was "introduced into our camp by our coming in contact with "individuals suffering from cholera, and I am inclined to "think, from the previous healthy state of our detachment, "and the freedom from all disease of the villages on the line "of our march, that we should have escaped the outbreak if "we could by any possibility have prevented our detachment "from mixing with the above travellers."

Now, with regard to this northern road from Chindwarra to Nagpore, it is on record that no cholera existed along it before the pilgrims had passed down it. H. M.'s 17th Lancers went down a few days before Dr. Smith's battery of artillery.

The 17th Lancers arrived at Seetabuldee (Nagpore) on the 24th February, and no cholera had appeared on the road previous to that date; on the 24th, after passing pilgrims dead and dying upon the road, a case occurred, and three days after (27th) white still encamped at Seetabuldee, two other cases. The regiment then moved on via Hingolee, south to Secunderabad, and for the first few days the cases were not numerous, but after the sixth day they increased. By the 12th March there had been more than fifty of the Europeans attacked! the Regimental Apothecary died. The first death in the city of Nagpore was on the 1st March, and in the cantonment of Kamptee some days later. But there is still further evidence that this cholera of 1860 in Nagpore was not an invasion of the southern provinces from the east. We have seen already that Chanda and Raepore to the east of Nagpore were not, according to Dr. Bryden's figures, attacked until May and March respectively. But cholera appeared at Hoshungabad 150 miles to the north-west of Nagpore on the Nerbudda river *early in February.*

The Medical Officer of the 1st Regiment Madras Native Infantry then stationed at Hoshungabad remarks, "Cholera "appeared in the station about the beginning of February. "There was a large fair at the time in the station, the people "forming the fair had come from a place where the cholera "was, and there can be little doubt that they brought it with "them. It raged violently in the city during the month of "February, and notwithstanding every precaution was taken "to prevent it, appeared in the Regimental lines in the begin-"ning of March. Up to present date (31st March) nine cases "have been admitted." It is worthy of note that Dr. Bryden's statistics show only two cases of cholera this year at Hoshungabad in the month of May. The mere fact of cholera being prevalent in a town for three months before the jail population took it, will serve to show how unreliable any conclusion come to on the statistics of the latter must be.

The 50th Regiment Native Infantry left Saugor on the 27th December for Bangalore, via Nagpore and Secunderabad. After crossing the Wurdah river on the Hyderabad frontier, the corps fell in with cholera in the tract of country between the Wurda and Godavery rivers, about 100 miles due south of Nagpore. On the 11th February the first case occurred. There were eighteen attacks in this Regiment. The cholera on the line of route appears to have been an offshoot of the Hyderabad epidemic of 1859, when about 4000

persons died in the town of Hyderabad, and the disease was very prevalent in the bazaar and a native corps at Secunderabad, up to the end of 1859, or beginning of 1860.

The facts we have given with reference to the spread of cholera in the Central Provinces in the beginning of 1860, will show that there are no real grounds for Dr. Bryden coming to the conclusion that it was an invasion from the endemic area to the east. It is evident that cholera was prevalent in the extreme north-west of the province early in February. The place referred to as previously attacked is unknown, but there would have been ample time for the traders and others attending the fair at Hoshungabad, to have taken the disease with them to the Mahadeo festival, in the Putchmaree hills later on in the month; and knowing what we do of the nomadic habits of the people who attend these fairs and festivals, it is a much more reasonable supposition that the pilgrims got their cholera from this direction rather than that an aerial poison should have been conveyed some hundreds of miles across country by south-easterly winds, and "precipitated" upon the identical spot, and at the identical time, where and when a vast multitude had assembled for a temporary purpose.

Before we can accept the theory of invasion of Nagpore from the east, Dr. Bryden must be prepared to prove its advance step by step, across Chota Nagpore, Sumbulpoor, and Raepoor, and to rebut the direct evidence of the presence of cholera in Hoshungabad early in February, and at Mahadeo on the 20th,—24th and its dispersion thence along the road to the south, (and only on the high road) to the cantonment and city of Nagpore.

And when Dr. Bryden talks grandiloquently of waves of cholera "spreading from the Bay of Bengal to the shores of the Atlantic," or to Eastern Africa, the inference is plain that he wishes us to understand that these distant invasions are due to meteorological causes. In these lofty generalisations he appears to overlook the fact that if cholera be wafted across continents and seas by aerial currents, no ship in crossing and recrossing the tract of such a wind at sea, has ever been known to have her living freight affected by it. Even in regard to the Andaman Islands in the Bay of Bengal, the winds coming over the territories to the eastward, have never yet been known to bring cholera with them. To talk of cholera being passed over to Eastern Africa and America, by aerial currents, when there is not the shadow of a proof that

the germs of the disease are capable of surviving the oxygenating action of sea air, is simply a waste of time.

In regard to America, the history of importation in 1865-66 is clear enough, and no mysterious reference to meteorological phenomena will make it clearer. If we could get the history of the slave and other traffic going on between the Persian gulph and Eastern Africa, the facts would no doubt so arrange themselves, as to admit of a right interpretation; without straining, as Dr. Bryden does, the theory of aerial transmission so tight that it collapses altogether.

But, it may be asked, have atmospheric phenomena nothing to do with the progress of cholera? We reply, undoubtedly they have.

The progress of cholera is distinctly modified by season, and certain meteorological conditions which go to make up the peculiarities of climate. The air of certain localities is at all times replete with the germs of organic life. Independently of the visible dust which is suspended in the atmosphere, it is quite within the bounds of possibility that impalpable and unknown germs of many diseases are breathed into the body with every respiratory effort. But with regard to these so-called germs of cholera, we know nothing except from observation of their effects. We know that the discharges from human intestines in certain conditions of fermentation will, if eaten by mice for instance, produce a fatal disease, resembling cholera in many of its features. We know that human beings drinking of water which has been accidently mixed with cholera evacuations, will exhibit symptoms of the disease cholera in a certain proportion of those who drink such water. We know that individuals who have been in contact with cholera patients, may be the means of carrying about on their persons or clothing the infecting matter of the disease, although not suffering from any visible effects of the disease in their own persons.

We have every reason to suppose that cholera is a thing which clings closely to, if it be not actually a product of, the soil. It loves moisture and low-lying localities. It clings to communities of men and to the places and things which are brought in contact with human beings. It may often be wafted from place to place by prevailing winds, but it has been known to progress against them. There is no proof that it travels over areas of country in the same ratio as prevailing winds, and Dr. Bryden's labors to show a connection between the two, though eminently creditable to his scientific zeal, and

talents for generalization, cannot be said to have advanced our knowledge of the true nature of cholera. The provinces of distribution, as he has mapped them out for Bengal, may be true provinces, and cholera may be wafted about by winds, when in a condition of dormancy, to burst into life on the change of season or climate, and cholera may be wafted direct from India to America, Marseilles, Australia, or any other country ; but to speculate on such points, while we have the clear and unmistakable fact that cholera is a communicable disease in the same sense that typhus and small-pox are communicable diseases, is to waste our strength on things which can lead to no practical good.

It is worth noting that Dr. Bryden, in his anxiety to put cholera in a group with affinities of malarial affections, and to deny to it any of the attributes of the acknowledged contagious diseases, has lost sight of the fact, that in India season exercises just as much influence over small-pox as it does over cholera. Not only is the parallel complete, in regard to a maximum of prevalence in certain localities at a special season of the year, but in regard to the irruption of an epidemic wave every third or fourth year. Now, nobody disputes the fact of small-pox being a disease directly communicable from person to person,and yet, if we examine the death statistics of our large Indian towns for a series of years, we find both in Bombay and Madras a remarkable uniformity of seasonal prevalence. That is, small-pox begins to spread in the dry months of the cold season, attaining its maximum of destructive power in March or April, and then subsiding more or less completely until the seasonal changes compel it to take on a renewed activity. The heading which Dr. Bryden has given to his four chapters on the natural history of cholera (pp. 11 and 12), might with a few trivial verbal changes, be made to serve for the heading of an essay on the natural history of small-pox. That cholera has a history of its own, and that small-pox has a history of its own, are indisputable facts, but that these histories present any analogies, Dr. Bryden denies, as we think, without having given the subject the consideration which it merits. The knowledge of the fact that the manifestations of small-pox are in some way connected with seasonal, that is meteorological phenomena, does not prevent us from trying to protect individuals from the effects of the poison, by the diligent use of vaccination, and although we are free to admit that cholera may be in like manner influ-

enced by meteorological changes, there is no reason why we should conclude that sanitary efforts to place individuals in a better position for resisting cholera are futile. Dr. Bryden has, we think, done good service in directing attention to the dependence of cholera on seasonal changes. In the present imperfect state of meteorological observation in India, and with the very incomplete statistics derived from isolated communities, such as European and Native troops, and prisoners in jails, we hold it to be premature to attempt generalizations having the force of law.

Dr. Bryden has thought himself at liberty to lay down the natural law of cholera, and in regard to the assumption that the germ of the disease has an existence wholly independently of man, and that it is conveyed by prevailing winds, and "precipitated" in this place, or "anchored" in that, we think he has not been justified by the facts at his disposal. His lucubrations on these subjects are, we think, better calculated to darken knowledge than to throw light upon the truth.

(To be continued.)

MEDICAL MISCELLANY.

Regulations required by the Pharmacy Act, 1868, to be observed in Selling by Retail, and in Dispensing, "Poisons."

All the Articles named or referred to in the appended List, both in Part 1 and Part 2, are POISONS within the meaning of the Pharmacy Act, 1868.

SALE BY RETAIL.

I. Relating to Part 1 and Part 2 of the List.—It is unlawful to sell any "Poison" by retail, unless the vessel, wrapper, or cover in which it is contained, be distinctly labelled with the name of the article, the word "Poison," and the name and address of the seller. This applies to all the articles in both Parts of the List.

II. Relating to Part 1 only.—It is unlawful to sell, by retail, any poison included in Part 1 of the List, to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article the seller shall, before delivery, make or cause to be made, an entry in a book to be kept for that purpose, of

1. The date of the sale;
2. The name and address of the purchaser;
3. The name and quantity of the article sold; and
4. The purpose for which it is stated to be required;

to which the signature of the purchaser, and of the person, if any, who introduced him, shall be affixed. The article must also be labelled with the name of the article, the word "Poison," and the name and address of the seller.

III. Relating only to Arsenic and its Preparations.—It is unlawful to sell Arsenic or any of its preparations, unless, in addition to all the foregoing regulations, the following provisions of the Arsenic Act be also observed:—

1. That the poison, if colourless, be mixed with soot or indigo, so as to colour it.

2. That the person to whom the poison is sold or delivered be of mature age.

3. That the occupation, as well as the name and address, of the purchaser be entered in the poison-book.

4. That when the purchaser is not known to the seller, and is introduced by some person known to both, this person shall be present as a witness of the transaction, and shall enter his name and address in the poison-book.

DISPENSING.

None of the foregoing regulations apply to any article when forming part of the ingredients of any medicine dispensed by a Registered Chemist and Druggist; but it is necessary, if a medicine contain a poison included in Part 1 or Part 2 of the List, that the ingredients of the medicine, together with the name of the person to whom it is sold or delivered, be entered in a book kept for that purpose (Prescription-Book), and that the name and address of the seller be attached to the medicine.

LIST OF POISONS WITHIN THE MEANING OF THE ACT.

PART 1. Not to be sold unless the purchaser is known to, or is introduced by some person known to, the seller; also entry to be made in Poison-book of 1. date of sale; 2. name and address of purchaser; 3. name and quantity of article; 4. purpose for which it is wanted; attested by signature; and must be labelled with 1. name of article; 2. the word "Poison;" 3. name and address of seller. Arsenic, and its preparations. (For special regulations see above.) Aconite, and its preparations. Alkaloids:—All poisonous vegetable alkaloids, and their salts. Atropine, and its preparations; Cantharides; Corrosive Sublimate; Cyanide of Potassium, and all metallic cyanides and their preparations; Emetic Tartar; Ergot of Rye, and its preparations; Prussic Acid, and its preparations; Savin, and its oil; Strychnine, and its preparations.

PART 2. Must be labelled with 1. name of article; 2. the word "Poison;" 3. name and address of seller. Almonds, Essential Oil of (unless deprived of Prussic Acid); Belladonna, and its preparations; Cantharides, Tincture and all vesicating liquid preparations of; Chloroform; Corrosive Sublimate, preparations of; Morphia, preparations of; Opium, and its preparations, and preparations of Poppies; Oxalic Acid; Precipitate, Red (Red Oxide of Mercury); Vermin Killers. (Every compound containing a "poison," and sold for the destruction of vermin.)

MANUFACTURE OF QUININE IN BENGAL.

No. 478, dated 21st February 1870.

From H. S. BEADON, ESQ., *Offg. Under Secy. to the Govt. of Bengal,*
To the Secretary to the Government of India, Home Dept.

I am directed to forward, for the information of His Excellency the Governor General in Council, the accompanying copy of a correspondence noted in the margin, relating to a proposal for the manufacture of Quinine in Bengal.

1. From Dr. T. Anderson, Superintendent of the Botanical Gardens, on leave in England, dated the 20th November 1869, and enclosure.
2. From the Officiating Superintendent of Botanical Gardens, No. 165, dated the 10th February 1870.
3. To the Officiating Superintendent of Botanical Gardens, No. 476, dated the 21st instant.

2. The Lieutenant Governor has sanctioned the expenditure of the sum of Rs. 2,500 applied for by the Officiating Superintendent of the Botanical Gardens to procure machinery for the experiment, the charge being met from the allotment for contingencies in the budget estimate of the Superintendent for the current financial year, as proposed in the 20th paragraph of his letter of the 10th instant.

3. His Honor has also authorized Mr. Clarke to proceed to Madras for the purpose of holding an interview with Dr. Broughton.

Dated 20th November 1869.

From T. ANDERSON, ESQ., M. D., *Supdt. of the Botanical Gardens, Calcutta, and in charge of Cinchona Cultivation in Bengal,*
To The Secretary to the Government of Bengal.

I have the honour to forward to you, for submission to His Honor the Lieutenant Governor of Bengal, a letter which I wrote last January narrating the result of some experiments I made at Darjeeling in the attempt to separate the cinchona alkaloids in a cheap and coarse state from young cinchona bark. The letter was not then dispatched to you, because, immediately after it was written, the state of my health would not allow of my carrying out part of the object I had in view in writing the letter, *viz.*, a journey to Ootacamund. But the main object of the letter—the utilization of the young bark from the trees in the Government plantation at Darjeeling by the manufacture from them of a cheap but powerful febrifuge well suited for use in native hospitals and

charitable dispensaries—is more important than ever. Mr. C. B. Clarke, the officer who is in charge of the Botanical Gardens during my absence, has also had this subject forced on his consideration by the very advanced condition of the cinchona trees at Darjeeling. It is evident that they will almost immediately require to be pruned by the lopping off of branches from the largest trees to admit air and light and to give room.

Mr. Clarke is aware, I believe, that such young bark will be almost unmarketable for the reason stated in my letter enclosed, *viz.* that crystalline salts of the alkaloids cannot be prepared from such bark, at least in any quantity, and he has therefore been endeavouring to prepare a rough and cheap form of the alkaloids from the bark of the branches.

Besides the two preparations I have described in the accompanying letter, there is a third form in which the alkaloids might be separated, and which may be cheaper and easier of manufacture from young bark than either my grey powder or the one made by Mr. Broughton.

I am indebted to my friend Dr. DeVrij, of the Hague, one of the most distinguished quinologists of the day, for the account of the process by which this third substance can be prepared. The young undried (fresh) bark should be macerated in water (cold) strongly acidulated by hydrochloric acid for about 48 hours; the water is after that to be strained off. The rough alkaloids are to be precipitated from this acid infusion of the bark by carefully adding lime (milk of lime). The precipate, after removal of the supernatant liquid, should be thoroughly well washed with cold water, pressed gently and well dried.

This precipitate consists of all the alkaloids present in the bark of the species, and dried bark can be used for this preparation as well as in any other process, but if the manufacture is carried on near the plantations, it is better to use fresh bark than to spend time and labour in drying it. I regret that I am at present unable to forward the specimens of the preparations referred to in my letter of last January, as they have been given to Dr. Christison, Professor of Materia Medica in the University of Edinburgh, who has offered to examine and report upon them.

It does not seem necessary that I should make any suggestion about conducting further experiments, beyond saying generally that the practical result of these experiments, and which I have always had in view—the extensive use of all the alkaloids found in one species of bark unseparated from each other—will be most readily attained by the experimental administration in hospitals of all of these three substances,—Mr. Broughton's powder, my grey powder, and that obtained by Dr. DeVrij's simpler process.

Such experiments will be necessary in the first place to fix the proper dose of the new preparation, and if the result is also favorable as regards the cure of fever, as no doubt it will be, there will be no difficulty in introducing these cheap preparations of the alkaloids into medical practice in India.

Dated 14th January 1869.

From T. ANDERSON, ESQ., M. D., *Superintendent of the Botanical Gardens, and in charge of Cinchona Cultivation in Bengal,*

To The Secretary to the Government of Bengal.

I have the honour to report the result of some investigations I have recently made at the cinchona plantations near Darjeeling, with the view of discovering a cheap process for separating the alkaloids from the cinchona bark. I undertook these experiments because I am convinced that one of the main objects in forming plantations of cinchona would be attained if a cheap preparation of the alkaloids could be made, and especially if such a form of the medicine could be procured from young bark. The investigations of Mr. Howard, Mr. DeVrij, and Mr. Broughton, quinologist in the Neilgherries, prove that alkaloids in the young bark are not in that highly elaborated condition which they attain in mature bark, as is proved by the small percentage of crystallizable combinations of the alkaloids with acids procured from young barks, although the presence of a considerable amount of alkaloids may have been discovered by the usual tests. It is almost certain that the alkaloids in the uncrystallizable state will prove quite efficacious in curing fevers.

I have lately prepared two substances from the young cinchona bark grown at Darjeeling; these contain all the alkaloids mixed with some extraneous matter in different degrees. The first of these, the brown viscid substance in the small jar, is called quinium. It is fully described by Mr. Markham in his letter to the Government of Madras, dated 16th January 1866, as "extrait alcoolique de quinquina á la chaux." I prepared it very much in the same manner as described by Mr. Markham. The process I followed was to macerate about 10 lbs. of dried coarsely powdered bark with half its quantity of lime, moistening the mixture with a small quantity of water. The mixture was frequently stirred during the process of maceration. Spirit obtained by distilling the common weak spirits manfactured in the hills from *eleusive coracona* was then added to the mixture, which was boiled for half an hour and then strained. This clear strained spirit was placed in a small still and distilled until the spirit was removed; the residuum was then carefully evaporated in a water bath until it acquired the consistency of the specimen now sent. The native spirit from *eleusive*

is so weak that, on distilling it, water only slightly flavoured with spirit comes over after the first half of the original quantity has been procured. However, about three-fourths of the alcohol used to dissolve the alkaloids are recovered by distillation.

The slaked lime I used in this process is the lime in common use at Darjeeling, and is collected from the sides of certain small streams in the hills which deposit carbonate of lime when they issue from the hill sides. This carbonate of lime is burned in kilns on the spot where collected.

I have treated some cases of fever with this substance (quinium), and I find that it is a powerful febrifuge, as indeed it must be, as it contains all the alkaloids present in the bark. It dissolves with some difficulty in cold water, but readily in warm water, and this solution does not become turbid on cooling.

Notwithstanding its undoubted efficacy as a febrifuge, it would, I think, be generally objected to by medical men both on account of its appearance and the difficulty the dispenser would have in accurately measuring it.

The second substance (a grey powder) consists of the alkaloids in an impure and non-crystalline condition. Mr. Markham also refers to this preparation in the letter I have already quoted; but his knowledge of this preparation of the alkaloids was derived from Dr. DeVrij, who thought this powder would be "more conducive to the objects in view than quinium."

The process apparently by which Dr. DeVrij separated the alkaloids in this form is mentioned at page 227 of the last Blue Book on Cinchona, published in June 1866.

I obtained the grey powder forwarded with this letter by following a different process from that described by Dr. DeVrij. Young bark about 16 months old was dried and coarsely pounded in a large wooden mortar similar to those used by natives for husking rice; the powdered bark was boiled in water in which a certain proportion of solution of caustic soda had been mixed. The dark colored liquor, the result of this boiling, was thrown away, and the bark was well pressed and slightly washed with cold water and again boiled in an alkaline water similar to the first, and the result of this second boiling was also thrown away. The bark after this second boiling was thoroughly well washed with cold water and pressed. The bark, now thoroughly decolorized, was then boiled in water, strongly acidulated with sulphuric acid, pressed after thorough boiling, and the liquors kept. This process was repeated a second time. These acid liquors were then mixed together and evaporated by slow boiling to one-fourth of their bulk and then filtered. To the filtered cold liquor solution of caustic soda was carefully added until a strong alkaline action was obtained, and un-

til no more precipitate resulted from the addition of the soda solution. The dark grey precipitate (impure alkaloids) was collected on a cloth, well washed, carefully dried in a water bath, and reduced to powder.

Since writing the above, I have received from the Medical Department a yellowish grey powder closely resembling the powder I prepared, and, like it, containing all the alkaloids in a non-crystalline form. This powder was prepared at Ootacamund by Mr. Broughton, Government quinologist, from bark grown on the Neilgherry plantations, and was sent to Bengal for experiment in the hospitals as to its efficacy as a febrifuge. The cinchona plants at Darjeeling are now so numerous and vigorous that a considerable quantity of young bark could be at once obtained from them by pruning and lopping off superfluous branches, treatment which would render the plants symmetrical and advance their growth as trees. From my knowledge of the chemistry of the cinchonas, I am unable to recommend now on my own responsibility a method by which these barks could be utilized, but I feel certain that either my grey powder or Mr. Broughton's somewhat different and probably superior one could soon be made on such a scale at Darjeeling as to supply a considerable amount of a valuable and very cheap febrifuge as efficacious as expensive sulphate of quinine to the native hospitals in Bengal. I know quite enough of the process of obtaining the alkaloids from the bark to benefit from a consultation with Mr. Broughton, and afterwards to recommend to Government and to inaugurate some cheap and simple manufactory of the alkaloids in the rough state. I have therefore to request that I may be permitted to proceed to Ootacamund and spend eight or ten days there to consult with Mr. Broughton, and observe his processes in the laboratory.

No. 190, dated 20th January 1870.

Endorsed by Govt. of Bengal.

Copy forwarded to the Officiating Superintendent of the Botanical Gardens for perusal and for any remarks he would like to make on the subject of Dr. Anderson's communication.

No. 165, dated 10th February 1870.

From C. B. CLARKE, ESQ., M.A., *Officiating Superintendent Botanical Gardens, and in charge of Cinchona Cultivation in Bengal,*

To The Secretary to the Government of Bengal.

I beg leave to acknowledge the receipt of your memorandum No. 190 of 20th January 1870, enclosing the letter of Dr. T. Anderson, concerning quinine manufacture at the Government

plantations near Darjeeling ; also of your memorandum No. 225 of 25th January 1870, accompanying the copy of the Quinology of the East Indian plantations by John Eliot Howard.

2. The work of Mr. Howard should more strictly have been entitled the Quinology of the Plantations of the Peninsula of India, as the facts discussed are drawn exclusively from the peninsula plantations, and the conclusions, though stated as general, do not in many important points hold good as regards the Bengal plantations.

For example : on page 1 of Part I, Mr. Howard opens the discussion of the proper elevation at which to grow cinchonas in India in these words :

"Recent observations on this point may save the apparently useless attempt to cultivate these plants at a level below 4,000 feet above the ocean."

Upon this I remark that the whole of the 1,000,000 plants of C. Succirubra at Rungbee are below that level. The species appears to thrive best at about 2,000 feet elevation, and grows very well down to the river at 800 feet elevation. Cinchona Calisaya grows best at similar elevations, but on the whole will not grow so high as C. Succirubra. In short, the only plants in the Rungbee plantations, which are *above* 4,000 feet elevation, are some C. Officinalis, which are being tried at this higher level as a last experiment, whether the species can be profitably cultivated at all at Rungbee.

3. The plantations at Rungbee appear from the reports to be fully as large and well advanced as the Neilgherry plantations ; and though the Rungbee plantations are several years younger than the Neilgherry plantations, the specimen bark sent home from Rungbee is considered (as I learn from Dr. T. Anderson) superior in quality to any that has ever been sent home from any other part of Asia. Hence the limitation, which I assert ought to have been made in the title of Mr. Howard's valuable work, is a material one.

4. From the 6th August 1869 up to the present date I have been almost incessantly employed on experiments with C. Succirubra bark up till 1st November at Rungbee, subsequently in Calcutta ; and I wish to state that any success which has attended my efforts is due to my friend Mr. Blanford, the meteorologist to Government, who is an experienced chemist. Before commencing experiments I had the advantage of his advice. During my experiments at Rungbee, I was in constant communication with him, and referred each difficulty, as it occurred, to him ; and in Calcutta, Mr. Blanford has not only allowed me the use of his laboratory and apparatus, but has devoted to my instruction and assistance many hours weekly during the last three months.

5. In his budget estimate for 1869-70, Dr. T. Anderson estimated that the thinnings and prunings of the Rungbee plantations during the cold weather would produce Rs. 1,000 worth of bark, and he estimated that the drying, packing, and carriage of this bark to London for sale would cost Rs. 1,000.

6. Dr. T. Anderson, as appears by his letter above quoted, is now desirous that the attempt to manufacture should be commenced at Rungbee. This is, I believe, a very general wish with the Medical Department in Bengal, and Dr. Ewart in his pamphlet on the subject has urged that the quinine should be manufactured by Government rather than that the bark should be sent for sale to London.

7. The manufacture of the crystallized sulphate of quinine now in general use (so far as can be afforded by its very high price) consists of two stages. The bark is treated with dilute acid, which takes up the alkaloids contained in it, and also a certain quantity of coloring matter, resin, and other rubbish, which quantity is considerable in C. Succirubra bark, the only bark which for some years will be produced in quantity at Rungbee. The acid infusion is neutralized by an alkali, when the quinine alkaloids are precipitated, accompanied with more or less of the rubbish. These precipitated alkaloids (more or less impure) are known as the result of the first stage of the manufacture. The second stage is in actual manufacture, generally performed by washing out of these precipitated alkaloids (by strong alcohol) the quinine, and evaporating the alcohol.

8. It will be seen from Dr. Broughton's letter forwarded to me by the Government of Bengal, No. 3601 of 1st November 1869, that there are reasons why the alcoholic process cannot be well performed at Rungbee, and that some "unusual" process must be employed. Dr. Broughton has been (he says) for some time engaged in devising a new process, but has not as yet carried his experiments to such a result as would justify him in making it public.

9. It is in contemplation of this state of the case that Dr. T. Anderson now advocates the manufacture of a rough hospital quinine at Rungbee, by which he means the production of the precipitated alkaloids in a more or less impure form.

10. Before I commenced my experiments, I addressed the Inspector General of Hospitals on this subject. He is of Dr. T. Anderson's opinion upon this question, and is desirous to try the rough alkaloids in hospital practice.

11. It seems now pretty well settled (*vide* last edition of the London Pharmacopœia, Dr. T. Anderson's letter, and Dr. Broughton's cinchona report of August 1868) that the other quinine alkaloids are valuable febrifuges and operate pretty much

as quinine, but are less powerful. Roughly it may be said that two grains of cinchonidine are equal in all respects to one grain of quinine. The action of cinchonine and the other minor quinine alkaloids is less satisfactorily made out, but in the C. Succirubra bark, usually 75 per cent. of the alkaloids present are either quinine or cinchonidine.

12. If, therefore, the medical practitioner dissolves the precipitated alkaloids in dilute sulphuric acid, he can give the same dose as is given by diluting in acid the crystallized sulphate of quinine. But I must here state that several doctors of experience in the Medical Department object that the crystallized sulphate is pure, and that they can be sure of the dose they give to a grain; whereas in the precipitated alkaloids the proportions of cinchonidine and even more inert alkaloids will be variable and doubtful.

13. This objection to the putting out of the precipitated alkaloids from the Government plantations is entitled to some weight. But contra, I doubt whether the medical officer is at present at all sure of the dose of quinine he gives. Cinchonidine is about one-third the value of quinine, and the crystals of cinchonidine are exceedingly like those of quinine. There is really very little quinine in general use that is not at present deeply adulterated with cinchonidine, and I doubt whether any amount of chemical knowledge will enable the medical officer to detect the percentage of cinchonidine present, unless he were provided with quite a different laboratory apparatus from that generally at his command.

14. Further, should the production of the precipitated alkaloids be carried on upon a large scale hereafter, it would be possible to thoroughly mix a large quantity, analyze a sample, and then issue it with the percentage of quinine and cinchonidine certified on the labels of the bottles.

15. With these views I engage in my own experiments with Rungbee C. Succirubra bark, and have confined myself mainly to the first stage of manufacture. I submit with this letter a sample No. 1 of the precipitated alkaloids which corresponds to the "grey powder" mentioned by Dr. T. Anderson. This grey powder is completely soluble in dilute acid, and is very clear, both of cinchona red and of resin. By treating it with scalding water and a little sulphuric acid and allowing it to cool, a portion of the alkaloid crystallizes (this is the sample No. 2 submitted), and the remainder may be re-precipitated (this is sample No. 3).

16. These samples are merely submitted as specimens of the products mentioned, for they are principally made from American Succirubra bark, as I have lately been in Calcutta without Rungbee Succirubra bark. The portion of these samples made from Rungbee Succirubra bark was exactly similar to that obtained from the American Succirubra bark, but in much smaller quantity in proportion to the weight of bark used.

17. Dr. Ewart has well pointed out that by working up the bark at Rungbee, not only would the expense of packing the bark and its carriage to England be saved, but there would be a great economy in fuel. (There is much boiling in the early stage of manufacture). At present, at Rungbee, our very excellent charcoal only costs us 5 annas per maund, and the high tree forest, reaching from the upper level of cultivation (5,000 feet) on the cinchona reserves to the summit of Sinchal, will furnish charcoal for a very long series of years, unless Government resumes these forests from the cinchona reserves for other purposes.

18. On the other hand, Mr. Howard has devoted himself for years to the manufacture of quinine, and it must not be expected that by working out in the jungle with Nepalese coolies, the same money value will be got out of a pound of bark as could be got out of that pound by an accomplished European quinologist. Much less can it be expected that *at first* any approximation to such a standard can be attained. The impression which I have gained from my protracted experiments is, that the successful manufacture of quinine (like most other manufactures) is not any particular secret or the adoption of any particular route, but is the result of the application of skilful manipulation and minute experience at each step and turn of the work. In asking Government, therefore, to authorize me to commence the manufacture there with the present season's thinnings and prunings, I should consider my recommendation would be justified by the result. If a product should be obtained that can just be serviceably employed, it might be then confidently anticipated that improvement step by step would follow.

19. In case the precipitated alkaloids should ultimately not prove satisfactory to the medical profession, and assuming moreover that we never discover how to produce therefrom economically a pure crystallised sulphate of quinine in sufficient quantity, it will nevertheless probably be found most profitable to Government to manufacture the precipitated alkaloids at Rungbee, and send them for sale to London rather than the bark itself. Not only is fuel and rough labour cheap at Rungbee, but the expenses of carriage will be reduced to about one-fiftieth of that of the bark.

20. The prunings and thinnings of this season at Rungbee are now proceeding, and are estimated to produce about 1,500 lbs. of bark, of which nearly 1,000 lbs. will be bark from wood three or four years old, the remainder from second year bark. I am sending 2 maunds of the very best for sale in London. The rest I propose to work up experimentally myself at Rungbee. I therefore now ask Government to sanction the expenditure from the current year's contingency of Rs. 2,500 for the requisite machinery. The sanction is needed in point of form, as there is an ample margin of contingency available to meet the charge; but I feel that the embarking in a manufactur

of this magnitude and difficulty should have the express sanction of Government.

21. Beside the expense of machinery, the experiment will cost Government the loss occasioned by not selling the bark, for though Dr. Anderson (as above stated) in his budget estimate gave the cost of drying, packing, and carriage to be as much as the bark would fetch, the 1,000 lbs. of higher class bark would doubtless produce, if sold in London, a large profit over those expenses.

22. I propose, if this experiment is sanctioned, to work up the year's crop at Rungbee into a grey power similar to the sample transmitted. This grey powder can afterwards partly be issued to the Inspector General of Hospitals, partly to be sold in London, and partly be experimented on in Calcutta, for production of the crystallised sulphate therefrom.

23. Regarding the process to be followed, I have travelled over most of the ground pointed out in Dr. T. Anderson's letter, and I consider that the same process cannot be followed exactly with all bark.

In the bark, from very young shoots, the quantity of resin present is large, and I have been unable to deal with it at all except by following Dr. T. Anderson's plan of a previous boiling in alkaloid water. This, however, doubtless sacrifices a percentage of the small quantity of quinine present on such bark ; and Mr. Blanford greatly doubts whether the bark from young shoots will ever prove remunerative to work up.

24. I have been exceedingly desirous of working the bark cold altogether, as suggested by Dr. T. Anderson. There is great advantage in working cold, not merely in saving of fuel and labor, but in diminishing the quantity of the vexatious resin (as Dr. Broughton calls it) and coloring matter. But I am sorry to say that bark, after repeated and protracted infusions, has produced with me large percentages of the alkaloid by decoction.

25. In the matter of infusion, I should therefore, as Dr. Broughton says, "proceed according to circumstances." With the better class of Rungbee bark of the present year, I should be inclined to infuse it first and decoct it afterwards ; interposing between the infusions and the decoction an alkaloid treatment in those cases where the resin proves very vexatious.

26. On another important point, I do not propose for the present season to adopt Dr. Anderson's suggestion, *viz.*, that of working the bark fresh. It has been stated that bark gives up its quinine more readily in a fresh state. I have tried the fresh bark, and I have not obtained a good result. I have little doubt that this failure was because my bark was not cut fine enough. Indeed, I could see that the dilute acid discolors the bark hardly one-fortieth of an inch deep. To cut up 1,500 lbs. of bark very fine would require special

machinery, the expense of which I wish to avoid for the current year's experiment, especially, as by drying the bark in the present drying-house, it can then easily be pounded in a mortar to a very great fineness.

Moreover, there will always be a great practical difficulty in working the fresh bark on a large scale. The fresh bark cannot safely be stored, as it soon ferments. Now the bark only "rises," that is, is fit for stripping at certain times, so that in the factory, if we work fresh, we should be compelled to provide a very large quantity of machinery indeed so as to be able to take in hand, at once, the bark that would come in upon us irregularly in masses. By working it dry, we can work it regularly at our leisure. Should my process not succeed well on the large scale, I can stay my hand, try any further experiment before proceeding, or finally in despair ship the dried bark to England.

27. A very large portion of the present book by Mr. Howard, and also a great many of Dr. Broughton's experiments, refer to the process of mossing up the trees, devised by Mr. McIvor. Before I took charge of the Rungbee plantations, Dr. Anderson had decided, after no very long experimenting, to have nothing to do with that process. About that decision there is no second opinion at Rungbee. Any person may, however, quickly decide it for himself in Calcutta.

Let him select a dozen trees 20 feet high (the Rungbee Succirubra trees have reached that height already, and will probably be 30 feet in a couple of years' time) ; let him get moss enough for the purpose (if he can—we cannot at Rungbee) ; let him tie this moss round the stem and branches up to the second year wood ; let him watch the trees six months, and loosen the bonds, where necessary, to prevent the trees being cut (working with the lowest coolie labor and superintending himself) ; then let him sit down and calculate the quantity of moss required for 1,200,000 trees (which there will be at Rungbee planted out by 31st March 1870), and where it is be collected, and how much labor it will take to apply it, and how much superintendence to watch it. Then he will be in a position to form a very fair opinion on the process of mossing up. Indeed, I do not think Dr. Anderson's opinion was founded on any more extended experiments or recondite speculations. Granting that the mossed bark produces ten times the quinine that the unmossed does, I would unhesitatingly prefer growing ten times the number of trees in order to get the required amount.

28. At Rungbee Dr. T. Anderson has kept quite clear of the refinements which have, apparently, so largely occupied attention at the Neilgherry plantations, and has devoted himself to growing the cinchona trees in the largest size and quantity at the lowest rate of expense possible. In this he has succeeded, not in the qualified

degree which it would appear from Mr. Howard's book success has been attained in the Neilgherries, but completely and beyond the most sanguine anticipations that were formed by any one. Moreover, it now turns out that this bark is superior in value to that from the peninsula plantations. The problem now remaining is to get the febrifuge out of this bark in a form practically available in medical practice and at the lowest possible cost.

29. With regard to the suggestion in the last paragraph of Dr. Anderson's letter, it would give me great pleasure to meet Dr. Broughton, and I do not doubt but that with a word he could save me the labour of many of the experiments which I shall have yet to make to clear up points of working detail. I also should like to obtain the aid of his experience in several questions connected with the machinery. I believe I might find time for a short visit to Dr. Broughton in March, and I have the honor to request Government to send me to Ootacamund, on deputation, for one month, more or less.

No. 476, dated 21st February 1870.

From H. S. Beadon, Esq., *Offg. Under Secretary to Government of Bengal,*

To The Offg. Superintendent of the Botanical Gardens, and in charge of Cinchona Cultivation in Bengal.

I am directed to acknowledge the receipt of your letter No. 165, dated the 10th instant, submitting your report on the subject of manufacturing quinine in Bengal, and in reply to inform you that the Lieutenant Governor has been pleased to sanction the expenditure of Rs. 2,500, applied for in paragraph 20, for machinery requisite for an experimental working of the manufacture. The charge will be met, as suggested by you, from the allotment for contingencies in your budget grant for the current financial year.

2. With reference to paragraph 29 of your letter, I am to say that the Lieutenant Governor is willing that you should proceed to Madras, as proposed by you, to hold an interview with Dr. Broughton.—*Gazette of India, March 12th*, 1870.

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Sub-Medical Department—Widows—Pensions.

G. O. G. No. 123 of 6th April 1869.—The following extracts from General Orders by the Government of India are republished :—

Fort William, the 23rd March 1869.

The following Military letter from the Right Hon'ble the Secretary of State for India, No. 46, dated 11th February 1869, is published for general information :—

MILITARY. INDIA OFFICE;

No. 46. LONDON, 11TH FEBRUARY 1869.

To His Excellency the Right Hon'ble the Governor General of India in Council.

MY LORD,—I have considered in Council your letter No. 462 of 7th December last, forwarding an application from the widow of the late Assistant Apothecary J. Wynne, of the Subordinate Medical Department at Bombay, to be allowed to come under the pension rules for that Department, published in General Order No. 550, dated 5th June last.

2. Your Government recommend that the same retrospective effect (*viz.*, 1st January 1866) may be given to those rules in so far as regards Invalid and Retiring Pensions, as was allowed in the case of the rules for the other Warrant Grades.

3. I accede to your recommendation.—(G. O. G. G. No. 358 of 1869.)

Deputy Inspectors General of Hospitals—Medical Officers of 55 and 60 years of age.

G. O. G. No. 142 of 20th April 1869.—The following extracts from General Orders by the Government of India are republished :—

Fort William, the 2nd April 1869.

The following Despatch from Her Majesty's Secretary of State for India is published for general information :—

MILITARY. INDIA OFFICE;

No. 52. LONDON, 25th FEBRUARY 1869.

To His Excellency the Right Hon'ble the Governor General of India in Council.

MY LORD,—A question has been raised whether, under paragraph 5 of Despatch of 24th April 1861, No. 172, published in General Orders by your Government on the 4th June, No. 497*, a Medical Officer below the rank of Deputy Inspector General of Hospitals, who has obtained the qualifying certificate of efficiency on attaining the age of fifty-five years, may, at the expiration of the period of three years for which such certificate holds good, again appear before a Medical Board in view to obtain another certificate of his efficiency for a further period of service.

*Madras G. O. G. 18th June 1861, No. 206.

2. It was observed in the Despatch of 22nd August 1860, No. 326 (paragraph 2), that it has been found necessary, even in the climate of Europe, to limit the age of Regimental Surgeons to fifty-five years, and it cannot be supposed that a wider limit of age is admissible in the more exhausting climate of India.

3. I fully concur in that observation, and although the rule has been relaxed to some extent in the case of those Medical Officers who entered the service prior to the promulgation of the Royal Warrant in India, I have caused an Officer who had submitted the question to be informed that it is not intended that an Officer who has been examined on attaining the age of fifty-five years, and obtained the certificate of efficiency above referred to, shall be allowed to remain in the service for any longer period than the three years for which such certificate holds good.

4. The proviso that in no case will a Medical Officer under the rank of Deputy Inspector General be permitted to remain on the effective list after he shall have attained the age of sixty years, was intended to apply to the cases of those Medical Officers only who, upon the introduction of the Royal Warrant, had already passed the limit of fifty-five years.

I have, &c.,

ARGYLL.

Medical Officers—Medical charge of Station Staff.

G. O. G, No. 159 of 4th May 1869.—The following extracts from General Orders by the Government of India are republished :—

With the view of preventing the repetition of a mistake into which Medical Officers have fallen in regard to the stations at which the sum of Rs. 30 a month is admissible to a Medical Officer for the medical charge of Station Staff, the Right Hon'ble the Governor General in Council directs that the following foot-note be inserted at the foot of the Table annexed to Government General Order No. 370,* dated 4th April 1867 :—

* "This allowance, however, is admissible only at Brigade Stations, or at Stations once the head quarters of a Brigade, at which the allowance has been authorizedly continued on its ceasing to be the head quarters of a Brigade ; or at those in regard to which the special sanction of Government to its being allowed has been, or may hereafter be accorded."

* An asterisk being of course affixed to the Rupees 30 entered in the Table above the note.

"All Order Books to be carefully corrected accordingly."—(G. O. G. G. No. 399 of 1869.)

* Madras G. O. G. 20th April 1867, No. 171.

Officers—Leave to England—Medical Certificates.

The foot-note* to paragraph 8 of Government General Order No. 341 of the 11th January 1869,† regarding the submission of medical certificates by Officers proceeding to England on account of ill-health, is to be expunged.

* Or Board presided over by Inspector General of Hospitals Indian Medical Service.

Order Books to be corrected accordingly.—(G. O. G. G. No. 465 of 1869.)

† Madras G. O. G. 16th January 1869, No. 29.

Military Officers in Civil Employ—Furlough Allowances.

G. O. G. No. 169 of 1869.—The following extract from Notifications in the *Gazette of India* are republished :—

Financial Department, Simla, the 23rd April 1869.

The following letter to the address of the Accountant General, Bengal, is published for general information :—

I am directed to acknowledge the receipt of your letter No. 1796 of the 15th ultimo, enquiring whether, in the case of a Military Officer in civil employ who proceeds on furlough before he has served for three years in the Civil Department, the salary drawn by him in the Military Department should be taken into account in striking the average on which his furlough allowance is to be calculated, and in reply, to state that the salary for the last three years in whatever department it has been drawn should be taken into account.—(G. O. G. G. No. 179.)

(General Orders by the Commander-in-Chief.)

Army Regulations.

G. O. C. C. No. 148 of 16th November 1869.—The following alterations are made in the Army Regulations.—Books to be corrected accordingly :—

Para. 323 is cancelled and the following substituted.

323. Local Officers retiring in England are allowed the benefit of the rank they may hold at the expiration of two years and a half from the date of their quitting India.

The following will be clauses *a* and *b* of para. 834.

a.—Officers obtaining furlough on private affairs under the Regulations of 1868, are to understand that the grant of the furlough only holds good for three months from the date of General Order notifying it. This period of three months is inclusive of the thirty days preparatory leave allowed to reach the port of embarkation.

b.—In the case of an Officer not embarking within the prescribed period, the Order granting him leave will cease to have effect.

Para. 857 is cancelled and the following substituted.

Para. 857. When an Officer's leave, or time for joining his appointment, to which no substitute or Acting Officer has been appointed, expires on a holiday or any day which falls within a recess, or holiday of more than one day's duration, and he takes charge of his duties on the forenoon of the first working day following such recess or holiday, he will be considered as regards allowances to have taken charge on the day on which his leave expired.

Para. 837. The following is to be added to this para.

Stating from whence they come, their residence, and on reporting departure, their destination.

* * * * *

Insane Soldiers—Native Army.

G. O. C. C. No. 155 of 3rd December 1869.—When Insane Soldiers of the Native Army are sent for admission to the Lunatic Asylum, Madras, the order of the Commanding Officer of the Corps or Station to which the Insane belongs, and the sanction of the Deputy Inspector General of the Division, are invariably to be forwarded with him.

Sanitary Return—Women and Children.

No. 266.

The Commander-in-Chief is pleased to direct that in future a General Monthly Return of Sickness and Mortality among the Women and Children of Her Majesty's British Troops serving in the (*) Bengal Presidency shall be rendered by the Medical Department of the British Forces, according to the following form marked A, and, in order to enable the Inspector-

(*) *Madras Presidency.*

FORM

General Monthly Return of Sickness and Mortality among the Women and Children of

| Division. | Corps. | Average strength. | Average daily Sick. | Stations. | Women. | | |

General of Hospitals to prepare such a Return, Medical Officers in charge of batteries of Royal Artillery and regiments of Cavalry and Infantry will furnish the statistical branch of his Office at (†) Calcutta with a Return in the form B.

2. These Returns will commence from the 1st September current, and Executive Medical Officers will transmit them through the Administrative Medical Officers of the circles in which they are quartered, within the first week of every following month.

(†) *At Madras.*

A.

Her Majesty's British Troops serving in the (*) *Bengal Presidency, for* _____ 18

WOMEN.

charged.	Total discharged.	Died.	Total died.	Remaining.	Total remaining.	Per centage of sick to well.	Per-centage of deaths to strength.

Children. The return is to be made out on large foolscap paper.

(*) *Madras.*

FORM B.

Her Majesty's _____ Regiment.

Monthly Return of Sickness and Mortality among the Women and Children belonging to the Corps for _____ 18 .

	Women.										Children.									
	Average strength.	Average daily sick.	Diseases.								Total.	Per-centage of sick to well	Per-centage of deaths to strength.	Average strength.	Average daily sick.	Diseases.								Total.	Per-centage of sick to well	Per-centage of deaths to strength.
Remained last Return																									
Since admitted																									
Total treated.																									
Discharged...																									
Died.....																									
Remaining under treatment.																									
Total ..																									

Surgeon, in Medical Charge,
H. M.'s _____ *Regiment.*

Station _____

Date 1st _____ 18 .

TO CORRESPONDENTS.

DR. PORTER.—*Received with thanks.*

DR. SHORTT. *Do.*

BOOKS, &c. RECEIVED.

Dobell's Reports on the Progress of Medicine in 1869.

Professor G. Smith's Address at the Convocation of the University of Madras.

Indian Medical Gazette (*April*, 1870.)

Journal des Connaissances Médicales (*to 20th March.*)

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ORIGINAL ESSAYS.

ART. XXXIV.—*On the treatment of Hepatitis and Hepatic Abscess, by Chloride of Ammonium.* By W. STEWART, M. D., Surgeon 2nd Bat. 21st R. N. B. Fusls.

HEPATITIS is a disease which is the cause of much sickness, invaliding and mortality among the European forces in India and its tendency to eventuate in hepatic abscess renders it one of the most formidable with which the Indian practitioner has to contend. It is acknowledged on all hands that the treatment of suppurative hepatitis is very unsatisfactory. Mercury is not only useless, but pernicious, and we search in vain among the usual text books for a remedy of sufficient efficacy to enable us to combat the disease. In bringing to the notice of the profession in this country a valuable but much neglected remedy in the treatment of suppurative hepatitis, I desire to observe that I make no claim to any new discovery. My object in this paper is to rescue from unmerited neglect a most valuable therapeutic agent, the value of which seems never to have been fully recognized by the profession generally. Chloride of ammonium has been for a long time used by the Germans in frequently repeated small doses in hepatitis, and both the Germans and French esteem it a valuable remedy in many diseases in which we either employ mercury or other alter-

ative deobstruents. Morehead, in his "*Researches*," states that he has no experience of the remedy, but says the Indian practitioner will do well to try it. Dr. C. Williams of this place, formerly Assistant Surgeon 68th Regiment, and first Political Agent at Mandalay, informs me that when in his Regiment he was in the habit of using the drug in hepatic affections with the best results. Since the 1st of September 1869 to date, there have been twenty-five cases of various forms of hepatitis treated *successfully* in the hospital 2-21 Fusiliers, Chloride of Ammonium being the sole medicine used. Of these four were well marked and severe cases of hepatic abscess and two others were obscure and somewhat doubtful. Two of the cases of abscess ended in complete recovery and were afterwards invalided for change of air on account of debility. The other two were progressing favorably and had so far recovered as to permit their going at the same time for change of air to Europe, rather than miss the opportunity of the last ship of the season. Should a more extended trial in other hands and in other parts of India under a variety of climates and circumstances contribute on the whole to like favorable results, the much dreaded suppurative hepatitis may be as effectually controlled and cured by the action of large doses of Chloride of Ammonium, as its twin associate, dysentery, by the use of large doses of Ipecacuanha, long ago a popular remedy and but recently re-introduced.

Before proceeding to the illustrative cases which I am about to give, it will be necessary to make some brief remarks on the disease and its general treatment for the better explaining the action of the Chloride of Ammonium, the stage of the disease in which it is applicable, and the points to be observed in its administration. Careful observation has impressed me with the necessity of attention to the most minute particulars as to diet and regimen in this as in other serious diseases; from lack of this and of good nursing all other treatment may be rendered powerless and the safety of the patient placed in jeopardy.

When hepatitis occurs in an individual of good diathesis, and is seen early and met by judicious treatment, the symptoms, local and general, will for the most part disappear, and the patient be restored to health. It is found however in actual practice that, in consequence of bad diathesis, advanced stage or other causes, recovery by resolution does

not take place, suppuration occurs, and hepatic abscess is formed. It is of importance to detect this event promptly and without hesitation, and to mark its progress, because it calls for a line of treatment different from that suitable to the antecedent stages. In the earlier stages the so-called antiphlogistic regimen and treatment are indicated according to the acuteness and severity of the symptoms, local and general, and the constitution of the patient. Should there be no accompanying dysentery, a mild purgative may be administered with a view of clearing out the primæ viæ and relieving congestion of the portal circulation; afterwards the milder saline diaphoretics and diuretics in frequently repeated small doses should be administered, till their action is well established, after which they may be given in larger doses and at longer intervals. I have found Liquor Amm. Acet. ʒ iii. with Tinct. Hyosciami ♏ v., administered in barley water every half hour or hour to give most relief, allaying the feverish symptoms and calming the nervous system, while the administration of from ʒ ss. to ʒi. of the latter (Tinct. Hyosc.) at bed time, after the repeated small doses during the day will often have the effect of inducing a little refreshing sleep—a point of great importance in this disease. The local application of ice continued for a considerable period, watching well its effects, or fomentations or bran poultices to the affected side will also act as powerful auxiliaries, and give much relief. In some few cases the application of six or eight leeches when there is much local pain and tenderness, and the patient is not reduced, may be necessitated; but in general even this amount of local depletion is not required. Strict quiescence in the recumbent position and restricted diet, unless the state of constitution clearly forbid, must also be enjoined. The diet should consist of arrowroot and sago, milk and water; and barley water may be taken freely as a drink, afterwards beef tea may be allowed. By a careful adhesion to the above system of treatment in a considerable number of cases in which the inflammation has not gone beyond the stage of vascular turgescence or commencing exudation, resolution may be effected. And here it is to be borne in mind that complete restoration of the capillary circulation of the inflamed portion or portions of the liver (for it is rarely that general inflammation exists) is not coincident with the cessation of febrile symptoms and local sense of pain and symptoms referable to the affected part. In fact re-

covery must be considered incomplete till several days have elapsed from the cessation from pain and febrile disturbance. During this time the patient must be confined to bed with strict attention to diet;—carefully watched, and any derangement of secretions corrected by gentle means. But the symptoms, instead of being removed, may be only moderated by the above treatment; exudation of plastic lymph may have taken place, degenerating into pus and terminating in abscess; the deranged state of the capillary circulation in its immediate neighbourhood preventing its removal by absorption. On the other hand, *it frequently happens, especially in military practice,* that the disease does not come under treatment *in the early stages,* and not till the peculiar symptoms pointing to abscess either impending or already formed are manifested. In either case the treatment above described as suitable in primary acute hepatitis is no longer indicated. The treatment must now be tonic and restorative—the diet should consist of milk light puddings, broths or animal jellies, and wine or other stimulants may be cautiously administered if they do not excite the pulse or produce irritation of the gastro-intestinal mucous surfaces.*

At this period of the disease when the acute symptoms have been allayed and suppuration is either threatened or already established, the Chloride of Ammonium should be administered in doses of grs. xx. morning and evening, noting carefully its effects which are striking and remarkably regular in the order of their occurrence. As a general rule about fifteen minutes after taking the medicine the patient experiences a sensation of warmth in the epigastrium, which by and by extends, pervading the abdomen and ultimately becoming diffused over the entire cutaneous surface. The nervous system is at the same time exhilarated sympathetically, and probably also through the circulation, for patient now feels "light-headed," as he generally expresses it, and at times drowsy. The acute pain previously experienced in the right hypochondrium and along the margins of the lower right ribs, extending as the case

* Chloride of Ammonium being itself a general stimulant, does away with necessity for the employment of Alcoholic stimulants in the considerable quantities otherwise required, and, unlike them, in addition to causing the absorption of pus, exercises, I believe, a specific therapeutic action on the liver instead of tending to increase the disease, which it is our object to remedy.

may be forwards to the epigastrium or backwards to the lumbar region, is either entirely removed, or in its stead pain is sometimes referred to a point higher up and towards the base of the axillary region, where before none was complained of. At this stage of the operation of the remedy, patient sometimes falls asleep, relieved of all his distressing symptoms. After the lapse of another quarter of an hour a free and equable perspiration takes place over the entire surface, which lasts for a period varying from one to two hours, and gradually subsides. In the meantime the pain which had shifted from the lower margins of the inferior ribs of the right side will again manifest itself at or near its original position, or may be referred to one totally different as the lumbar region or even the right hip. With the evening dose similar effects will be observed to take place with like regularity and certainty; and with each succeeding one the interval of relief from pyrexia and pain referred to the part affected, as well as sympathetic pains of shoulder, arm, &c., (which latter are at times distressing) wil. gradually become longer, till at length, in favorable cases, the relief becomes complete and constant. After several doses of the medicine the urine is much increased in quantity, is limpid and passed without uneasiness. The increase is chiefly at night, causing the patient to wake suddenly out of his sleep, perhaps three or four times for the purpose of micturition. After a few days the appetite is much improved, and patient craves for more food which may be given, provided it be light,—nutritive and easily digested; but solid food should, on no account, be permitted, as its ingestion would in all probability provoke a recurrence of all the acute symptoms. During the use of the medicine care must be taken that patient does not catch cold when perspiring; and when perspiration has ceased, the surface should be dried with warm towels—otherwise chills will be experienced.

In no standard work which I have consulted do I find the slightest allusion to the above remarkable train of effects following on the exhibition of Chloride of Ammonium. In one work it is described as a general stimulant, in another as a diaphoretic and diuretic, while in a third it is merely noted as a laxative. The remarkable diaphoretic and diuretic effects so constantly following its use in hepatic affections are nowhere mentioned. The silence of authors on the above points, coupled with

the fact that in some cases in which I have known it tried, either as an experiment in health or used as a remedy in disease other than hepatitis, it has either been without appreciable effects, or, if any, there have been but slight and not characteristic, seems to point to the inference that the medicine is not only a specific in certain hepatic affections, but that its peculiar action being manifested, in any given obscure case, may be considered diagnostic of hepatic disease. The above observations however are thrown out as only probable and suggestive of further enquiry.

A remedy which is at once found to possess the several properties of a stimulant of the capillary circulation, general and special, which is at the same time a powerful diuretic and diaphoretic, and withal anodyne cannot but exercise a remarkable influence on the processes of nutrition and absorption, secretion and excretion.

"The secretions of the skin, kidney and liver abound in salts, one of these organs may therefore become vicarious of another in removing these matters from the system. The researches of Dr. Beale also render it probable that in disease certain saline substances are accumulated in large quantity at the seat of disease at the expense of some secretion of which they form a normal constituent." By its marked diuretic effects solely, Chloride of Ammonium is capable of exercising a powerful influence in relieving the portal circulation, and bringing about a healthy state of the capillary circulation of the liver, thereby causing absorption, and elimination of diseased products. In veterinary practice diuretics are used with excellent effects in combating pulmonary and other internal inflammations, as well as for getting the animal speedily into condition and improving the state of his hide, and it is probable they are capable of more extensive application than is commonly supposed.

The cases which follow will serve to illustrate the treatment pursued in many others, and, I may add, with equal success. The first is a case of well marked acute hepatitis, the second one of suppurative hepatitis, and the third which serves to illustrate the efficacy of the remedy in chronic hepatitis, is by Dr. W. Alexander, Staff Assistant Surgeon, doing duty with the Battalion, and is given verbatim.

Case.—Private A. McK——,upwards of six years in India (had an attack of hepatitis in 1865.) Admitted on the

18th September 1869, complaining of acute pain of right side, extending from the epigastrium round the margins of right lower ribs to spine, aggravated on the slightest pressure; severe pain of right shoulder, extending down outer side of right upper arm; unable to lie on left side on account of dragging pain in right hypochondrium, when in that position. Complains also of severe pain at intervals of some minutes shooting through temples; burning pain in eye balls, skin hot, tongue furred (white), pulse frequent. The above symptoms, in a minor degree, had been present for some time previous to admission. Evening chills with cold clammy sweats and general pyrexia towards early part of night. Was ordered a tepid bath with cold applications to head; bran poultice to side and to have Mist. Diaphor. ℥ i. with Tinct. Hyoscy. ♏ v. every two hours.

20*th.*—Febrile symptoms have subsided; pain of side and shoulder much abated. To have Chloride of Ammonium grs. xx. in ℥ ii. Cinnamon water morning and evening; Beef tea diet and lemonade as a drink.

25*th.*—Is much better. Continue medicine.

28*th.*—Since the 26th complete freedom from pain of side and shoulder; cutaneous and renal secretions much increased; appetite improved; can take a deep breath, and lie on left side without pain or uneasiness.

2*nd October.*—Discharged convalescent.

NOTE.—After attending hospital for a short time this man returned to his duty and up to date has had no recurrence of pain or other symptoms, and his general health is better than it had been for a long time previously.

Case.—Dr. D. B.——, nearly two years in India, admitted on the evening of the 5th October 1869. Complained of purging frequently during the day and previous night, also of acute pain over entire surface of abdomen. There was great tenderness over right hypochondrium and abdomen generally, and the slightest pressure of the finger caused great increase of pain. Countenance expressive of suppurative hepatitis, anxious, pale and bathed with cold perspiration; tongue coated; skin dry but of natural heat; pulse frequent. Owing to the great severity of the pain, six leeches were applied to the side, and patient had a tepid bath with much relief to the symptoms, local and general. Had Ammon. Chlorid. ℈ i. and in case the purging con-

tinued was ordered Pil. Hydrarg. gr. viii., Pulv. Ipecac. Comp. gr. xii., M. divide in pil. iv.; one to be taken every two hours.

6*th.*—After consultation this morning it was agreed that the case was one of undoubted abscess of the liver, of a severe nature, and in which the prognosis was anything but favorable. Surface was now cold; face and hands bedewed with cold sweat; pulse 92, small and weak; was not purged during the night. To have brandy flip and three pints beef tea as nourishment.

1½ P. M.—Surface still cold, pulse 92, another brandy flip. Continue bran poultice, and to have Ammon. Chlorid. ℈ i.

4 P. M.—Surface warm, pulse 92, perspiring freely; passed a large quantity of high colored urine during the day. To repeat Chloride of Ammonium.

7*th.*—Bowels moved five times during night, motions feculent; passed urine six times during the night; perspired a good deal. Repeat pills ordered on the 5th, to take one every two hours. Beef tea diet, four ounces port-wine.

8*th.*—Pulse 84; feels better; bowels quiet.

11*th.*—Pain of side much relieved, looks better; bowels regular. Had some sleep during the night; pulse 80, complains of short dry cough which commenced yesterday about noon, and continues to be troublesome. Tea diet, two pints beef tea, two pints milk, six ounces port-wine, and barley water for drink. Continue medicine.

17*th.*—Since last report has continued pretty much the same, with slight accessions of pain in side and febrile symptoms from time to time; last night pain was very severe,—easier this morning. Continue medicine; apply ice to side.

Vespere.—Feels the ice agreeable; pain easier; pulse. 76.

18*th.*—Much relieved; slept well last night; appetite good. Continue Chloride of Ammon.

27*th.*—Since last report has continued gradually to improve; appears cheerful this morning; feels and looks much better; can lie on either side with perfect ease; on taking a deep inspiration, feels a slight catch in breathing. Continue Chlorid. Ammon.

20*th November.*—Since last report his health and spirits have improved daily; is now able to move about the ward, without pain or uneasiness; fulness of side which was

observed from an early period of the disease, has disappeared, and patient can bear considerable pressure over hepatic region without pain.

NOTE.—Recovered perfectly and was ultimately sent to Europe for change.

A fair Case of Chronic Hepatitis.—Private D. M., 2/21st Fusiliers. A stout muscular man of intemperate habits; with ten years' service, six of which has been spent in India, was admitted into the detachment hospital at Port Blair on August 1st 1869, having a tumour, which is described by the Medical Officer in charge as follows:—

"A swelling, the size of an orange, was discovered in the epigastric region, exactly in the mesial line, perfectly circumscribed and immovable when grasped by the hand or when the body is turned on either side. He states that he strained himself a few days before admission and never saw the swelling till then."

He remained under treatment till the middle of September, when he was forwarded to the Regimental Hospital at Rangoon, with the history of the case from which the above is taken. On presenting himself at Hospital he was carefully examined by both Dr. Stewart and myself; but we failed to detect any tumour or swelling of any kind. He was admitted however and kept under observation, and in a few days the case was diagnosed as one of chronic hepatitis; the chief symptoms being a constant pain in epigastrium and hepatic region, a furred tongue, feeling of nausea after food and constipation. Leeches were applied, followed by poultices, and Nitro-Muriatic Acid was administered with considerable benefit and relief, but it was not till I commenced to give Muriate of Ammonia in twenty grain doses that he got rid of these symptoms: first the pain became less annoying and gradually ceased, the tongue cleaned, at the same time the secretions (especially the urine) increased in quantity. The effects of the medicine are described by the patient as producing a glow of heat and a feeling of warmth and comfort, followed by copious perspiration and increase in the quantity of urine. Ten days after the commencement of the treatment he was discharged well.

Art. XXXV.—*Case of Acute Yellow Atrophy of the Liver.*

By A. Porter, M. D., Civil Surgeon, Akola.

Under the above title I publish the following case, which occurred during last rainy season in a robust, healthy-looking young man, a prisoner in the Akola Jail. The intense jaundice, wild delirium quickly passing into coma, and speedy termination of the disease in death, with the post-mortem appearances, sufficiently indicate, I think, the correctness of the diagnosis, and this, notwithstanding the failure to detect in the liver and kidneys the pathognomonic constituents, leucine and tyrosine.

Of the various causes usually assigned for this rare disease, malaria and intemperance were the only ones present in this case. There was no history of syphilis, and after an incarceration of five months, anxiety of mind on this account can hardly be supposed to have been very great.

Luxea, Mang., labourer, aged 22 years, of intemperate habits, had been a prisoner in Akola Jail for five months, when, on the 16th September 1869, he was admitted to hospital, complaining of having had fever, with shivering and bilious vomiting at noon on the two previous days. He was a small, robust, boyish-looking man, in good flesh, and had suffered often before from malarial fever, but never from any other complaint. On admission, his bowels were constipated and tongue moist and coated thickly with a yellowish white fur; there were no markedly febrile symptoms, the pulse being 72, and the respirations 16, and the skin was cool. He slept well during that night, and on the morning of the 17th exhibited no greater signs of fever than a dry tongue, his pulse being at 72; however the skin was dry, and the temperature in the axilla 99° F.; towards night he became delirious, talking wildly, and with difficulty kept in bed; this passed into coma towards morning, and he died thus at 7 A. M. (of the 18th.)

There was intense jaundice from the first, the area of hepatic dulness was not markedly lessened at the time of admission, but after death the liver was found to be very small, viz., one fifty-fifth (instead of one thirty-sixth) of the body weight. There was tenderness on pressure over both liver and spleen, and the patient moaned frequently as if in pain. The abdomen was moderately distended

and soft. The spleen, though tender to pressure, was not enlarged, as it weighed only six ounces after death. The patient vomited several times, but the matter ejected was not seen by the writer; however, it was probably "black vomit" as the stomach and intestines were found to contain a tar-like fluid after death. The urine passed on the 16th was hazy, red, amber, acid, and of the specific gravity 1010; it contained lithates, and one-sixth by volume of albumen (precipitated), but no bile acids. On the 17th there was said to have been no urine passed, but after death a few ounces were found in the bladder; this was of a greenish red colour, was hazy and acid, was found to contain lithates, and bile acids, but no albumen. Leucine or tyrosine was not looked for in the urine, but was not found in either the liver or kidneys. The treatment adopted was the administration of purgatives, enemata, and quinine. Death occurred about 96 hours from the date of first attack, 48 hours after admission, and 12 hours after the onset of delirium.

Autopsy nine hours after death. Body well nourished, length 5 feet 4 inches, weight 100 lbs. (The weight of the prisoner on incarceration was 106 lbs.) Rigor mortis going off.

SKULL.

Scalp congested with venous blood.

Calvarium very adherent to dura mater for such a young subject.

Dura mater. A rather greater escape of blood than usual along the line of the longitudinal sinus from the ruptured calvarial veins. The superior longitudinal sinus contained a soft clot of venous blood.

Arachnoid pearly in region of temples, translucent elsewhere, except along the longitudinal fissure, where the visceral layer was torn in removing the dura mater on account of its adherence to the latter.

Pia mater injected with venous blood, most markedly at the base of the brain. *Brain* weighed 44 ounces, substance moderately soft. *Grey matter* of rosy tinge. *White substance* presenting rather numerous bleeding points. *Choroid plexus* not congested. Ventricles contained normal quantity of fluid.

Chest.

Pleuræ shining, and yellowish orange coloured, healthy. Lungs moderately collapsed.

Right lung. Weight 10½ oz., several sub-pleural red spots on the posterior of base, and margins of lobes fringed with red (a sub-pleural very narrow red piping, as it were), substance spongy, cut surface of an orange or yellowish red pink colour.

Left lung weighed 9¼ oz., purple sub-pleural spots at apex, instead of at base, and purple fringing not so complete, but otherwise quite like right.

Pericardium contains a little serum; right side of heart distended with dark fluid blood, and some soft clots. Left side contracted and empty, walls thick; weight of the organ 8½ ozs.

Abdomen.

Peritoneum stained yellow, healthy; *liver* small, flaccid, weight 29 ozs., capsule shining and of a yellowish red or light orange colour, substance cuts easily, cut surface uniform, orange, or buff yellow, or rhubarb yellow colour. It was very friable, and hardly any trace of lobules was detectable. Under the microscope it was seen to be made up of fat granules and cells; no crystals of leucine or tyrosine were detected.

Gall bladder contained about ℥ii. of dark green viscid bile.

Spleen small, firm, weight 6 oz., capsule of a light sea green colour. Cut surface of a chocolate colour; substance pretty tough, not albuminoid; nothing oozes out on pressure.

Pancreas weighed 3 oz. and looked healthy. *Right kidney* weighed 4 oz., capsule stripped easily. Surface of a saffron yellow colour, cuts firmly; cortex looked granular. Very fatty under the microscope.

Left kidney quite like right.

Mesentery and *omenta* quite purple, except in a few spots, which are not injected, and these are saffron yellow.

Stomach coated with a thick tar-like mucus. Mucous membrane injected arborescently in parts.

Small intestines contained about half a pint of a tar-like pultaceous fluid. Mucous membrane, when cleaned of its sticky black mucus, was seen to be of a yellowish grey colour, and not injected, except in Peyer's patches which were livid and cribriform. Six round and two tape worms were removed from this part of the gut.

Large intestines contained thin mud-coloured feculence and some scybala with three round worms. Mucous membrane of a yellowish grey colour, not injected.

ART. XXXVI.—*Cases of Snake Bite.* By JOHN SHORTT, M. D., Superintendent General of Vaccination, Madras Presidency.

IN continuation of the cases of Snake-bite given in the last number of the *Monthly Journal of Medical Science*, I have the pleasure to add the following, and will leave the review of the whole of the series for a future occasion. For these particulars I am indebted to the kindness of Dr. McKenzie, C. B., C. S. I., Inspector General Indian Medical Department, who, at my request, was pleased to send a circular through the several Deputy Inspectors General of Hospitals, calling for all cases of snake-bite treated by the Medical Officers of this Presidency during the last ten years, which I have now the pleasure to detail as received by me.

CASE 1.—From a Police report from the town of Seeonee, dated 9th February 1870. It is stated that a man named Cogayphar, of the Gond caste, was bitten on the 27th December 1869, at 12 A. M., in the village of Burailee, on the right foot, by a snake, the name of which was not known; the leg was swollen and numb. The treatment is not stated: the report merely states that the man was treated, without specifying the remedies used. The patient died on the 28th of December at 6 P.M., death occurring in thirty hours.

CASE 2.—Assistant Surgeon A. L. Hackett, 31st L. I., Berhampore, reports that a tailor came to him in the month of August 1869 at Kurnool, and asked to be treated for snake-bite. He is said to have brought the snake with him at the time; it was alive, and was a true specimen of the

cobra, apparently healthy, and about 18 inches in length. The bite was situated on the index finger, the wound was a very severe punctured one, the hand and forearm were swollen considerably. Seeing that the poison had been absorbed as no ligature was applied, the patient was made to steep the finger in a strong solution of ammonia, and was given a large dose of ammonia, in about half a tumbler of brandy, after drinking which the patient went away and returned in a couple of days quite well. The symptoms present at the time the patient was seen, are said to be pain and swelling of the hand and forearm, with a feeling of nausea and slight headache.

The following six* cases are extracted from the records of the Native Infirmary, Madras, by Surgeon Major J. C. Rogers.

CASE 3.—Veerasawmy, Æt. 34, 10th June 1863, admitted last night drunk, with a snake-bite just above the right heel. He was low and stupid, and smelt very strong of toddy. The snake that bit him is not poisonous, and he looks to me suffering rather from the effects of drinking. His pulse is distinct, though feeble, and it is not accelerated; skin of unusual temperature, bowels open. Liquor ammoniæ has been applied to the snake-bite, and has been administered internally. This man was bitten about 11 or 12 hours ago. Sinapisms were applied to the inside of the thighs, the calves and insteps.

11*th.*—Much roused; bowels opened last night by enema; urine bloody-looking this morning; eyes congested and lachrymating, skin cool.

℞ Pulv. Jalap. ʒi.
Aquæ, Aquæ Menth. Pip. āā ℥iss, st.

12*th.*—Bowels not opened till relieved by an injection, urine still bloody, skin of normal temperature, pulse about 100, of good strength, no hypogastric or lumbar tenderness, right foot swollen.

℞ Tinct. Muriat. Ferri. ♏ xx.
Aquæ, ℥ i. every four hours.

Turpentine stupes to loins. Poppy head fomentation to right foot.

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* One case that occurred in 1861, Dr. Rogers states has not been recorded; the other five are given.

13*th.*—Urine less bloody, foot still swollen. Cont.

14*th.*—Absconded last night.

CASE 4.—Chellen, Æt. 18, admitted 18th March 1864, 10 A. M. Somewhat stupid, and three little wounds in the distal phalanx of the ring finger of right hand, about an hour before admission produced by the fangs of a *cobra di capello* about five feet long, which was killed and brought with the boy to the hospital. The wounds were well washed with liquor ammoniæ, and 10 minim doses were given at an interval of an hour, and he then seemed well able to do without any more. Discharged.

CASE 5.—Ramen, Æt. 14, was admitted on the 14th of July 1864. Was bitten in the little finger of the left hand yesterday by a cobra which was caught. He came in about five hours after the bite without any bad symptoms. There was tingling of the wounded parts, which were washed in spirits of ammonia.

15*th.*—Discharged well.

CASE 6.—Ponee, Æt. 30, admitted 24th July 1868. Brought in a semi-comatose state yesterday morning, and was said to have been bitten by a snake the night before. A dose of sal volatile was given forthwith, and liquor ammoniæ was applied to the right instep, which was swollen, but did not betray more than an abrasion as evidence of the bite. The head was shaved, and a blister applied to the vertex. A second dose of sal volatile was given about noon, although she had begun to revive previously; this morning she is much better, pulse and skin normal. Her bowels have been opened naturally, tongue coated.

℞ Extr. Taraxaci ʒ i.
Acid. Nitro-Muriat. Dil. ʒ i.
Inf. Quassiæ ℥xii—℥ii. *ter in die.*

26*th.*—Patient revived, sitting up. Tongue clean, foot somewhat swollen.

Fomentation to foot.

27*th.*—Œdema of foot continues. No conjestion of eyes, bowels natural, no fever.—Cont.

28*th.*—A slough forming on foot near the teeth punctures, which are now apparent.

Blister foot.

℞ Inf. Cinchonæ ℥ xii.
Acid. Nitro-Muriat. Dil. ʒi.
Tinct. Opii ʒi.—ʒii. *ter in die.*

30*th.*—Less swelling.

3*rd August.*—Continue.
Iron mixture after meals.

5*th.*—Slough separating. Taking measure of arrack. Cont.

12*th.*—Slough separated, surface clean and contracting. Cont.

Sore very clean and healthy looking, bowels naturally open. Continued to improve steadily till the 22nd September, when she was discharged.

CASE 7.—Veerasawmy, Æt. 25, admitted 8th January 1870. Came to hospital this morning at 2½ o'clock, having received a supposed snake-bite while going his rounds. There were three distinct punctures on the dorsum of the left foot, which were cut down or opened and allowed to bleed freely, and the wounds afterwards cauterized. Patient perspired freely, and appeared very nervous, but was quickly rallied by ammonia draughts. Complains of feeling drowsy.

9*th.*—Well. Discharged.

Dr. King, the Civil Surgeon of Dumoh, writes as follows:—

I have the honour to submit a return of snake-bites since 1862, that were brought for treatment into the main and three branch dispensaries in the Dumoh district; but I regret I am unable to state what description of snakes they were, or of the circumstances under which the bite occurred, excepting in one instance that occurred at Dumoh in 1868. The total number of bites is 32, and deaths 8, which is one-fourth or 25 per cent. of deaths. The recoveries must have been from bites of harmless snakes, of which it is said there is a great variety in this district, and which are to be found in the wet weather; and those thus bitten may have come for treatment through fear or ignorance of the character of the snake. The treatment generally was scarifying the wound, applying a ligature where it was possible to do so, freely applying lunar caustic, and administering from 40 to 50 ℳ of Liq. Ammoniæ in water every two hours, until danger was overcome. The exceptional case above noted was one I saw and treated under the following circumstances:—

CASE 8.—A warder in the workshop put his hand over a lintel to remove something he had left there the previous day, when he was suddenly bitten on the first phalange of the index finger of right hand. He immediately applied

a tight ligature below the bitten part with the assistance of the prisoners under him. On search being made, a large black cobra (nagg) was found, with its body entwined through the meshes of the bamboo roof, with only its head and neck in a state of freedom. It was killed in the presence of the bitten man, who on seeing the real character of the reptile, lost all hope and became nervous, cold, and agitated. Before I reached the spot the native doctor had freely scarified the finger, and I applied to the wound a strong solution of Iodine. Blood trickled for some time. I gave the man a dose of Liq. Ammoniæ, and repeated it half an hour after, but he refused to take the third dose. He remained in the dispensary for some hours, and returned home without any bad consequence beyond a festering sore, which healed after a few days. The snake was a veritable cobra, and for which the usual reward was paid. The man's recovery, in my opinion, was owing to the timely application of the ligature and subsequent scarification.

Assistant Surgeon J. Houston, in medical charge cantonment of Palaveram, writes as follows :—

I have the honor to state that a sepoy was admitted for snake bite in 1869.

Case 9.—A snake bit his foot at night while on sentry. He immediately tied his handkerchief above the bitten part and came to the hospital. He appears to have had a slow pulse, and to have vomited repeatedly. Four half drachm doses of liquor ammoniæ were administered, and a paste of liquor ammoniæ and ipecacuanha was applied to the bitten part, which was inflamed and swollen. The sepoy returned to duty in eight days. The snake was not captured; and there is nothing to prove that it was venomous.

Dr. Fitzgerald, Surgeon Major 4th District, submits a table giving four cases of snake-bite treated as out-patients in the Triplicane Dispensary by Honorary Assistant Surgeon Moodeen Sheriff, and the whole four cases are noted as cured. The treatment is not given. Dr. Fitzgerald states that he regrets being unable to give any detailed account of the treatment adopted, but that he knows Moodeen Sheriff relied principally on ammonia internally in such cases.

The following case was treated successfully with Potash and brandy.

27th March 1870, 8 P. M.—Veerasawmy, Æt. 35, Hindoo (Pariah) coachman; a stoutish-looking, robust-made man, about 5 feet 8 inches in height, and weighing 120 lbs., was brought to my house in a *Jutka* bandy for treatment, in consequence of his having been bitten by a snake. The patient states that about 6-30 P. M., whilst occupied in his master's (Iyasawmy Pillay, Agent to the Zemindar of Ramnad) house, Egmore, he had occasion to go into his garden, and on his return, he trampled on a large snake near the stables, which immediately entwined round his left ankle, and bit him on the dorsum of the foot at the base of the metatarsus of the second toe, when he shook the reptile off, and immediately felt an acute burning stinging pain in the part where he was bitten. The patient distinctly asserts that it was a cobra that bit him, for he recognized it by the expansion of its hood. The snake escaped. Shortly after he was bitten, a stout cotton rope, about a quarter of an inch thick, was tied around the upper part of the left thigh by a friend, and a second cord just over the knee-joint; and on his wife's informing his master of the accident that had happened, the latter placed him in his *Jutka* bandy and started him off to my house. The patient appears greatly alarmed, and complains of a burning pain in the part where he was bitten. On examination, a pin's point of dried blood is seen in the part pointed out, but no second wound is visible; the skin about the part is more than usually wrinkled, thick-looking, and covered with red dust. The foot was carefully washed and examined; no other wound visible, even the original pin's-point-like mark of dried blood being washed away; but on the patient pointing to that particular spot, it was laid open, skin deep, to the extent of half an inch, and after being well washed with cold water, a solution of Potash was freely and frequently applied to it. The cords put on by the patient being found quite loose, another was placed tightly above the ankle joint, and he was given

Liquor Potassæ, ℥ xxx.
Brandy, ʒ iii. with water.

8-5 P. M.—Pulse intermitting 68, skin cold and moist, breathing hurried.

8-15.—Liquor Potassæ, ℥ xv.
Brandy, ʒ i.
Water, ʒ iss.

8-30.—Pulse 72, slow, full and soft, skin warm and dry. Repeated the draught.

8-45.—Respiration 24 in the minute. Repeated the draught.

9.—Wounded leg placed in a cold potash bath (Liquor Potassæ ℥ ii. to the gallon of water) ; two of the congested veins on the dorsum of the foot were opened by a lancet and allowed to bleed.

Repeated the draught.

9-15.—A warm Potash Bath substituted for the cold one. Pulse full, soft, and slow. Pupils slightly dilated. Skin natural, complains of giddiness, pain of a burning character about the wound, and a dragging aching feel along the limb.

Repeated the draught.

9-30.—Much the same: inclined to sleep, but kept awake.

9-45.—Pulse full and strong, 98, skin warm, complains of giddiness (drowsiness.)

Repeated the medicine.

10.—Pulse soft and full, compressible, 98. Drowsiness increasing. Repeated the medicine.

10-7.—Passed 12 ounces of a very pale coloured urine, slightly acid; specific gravity 1005.

10-15.—Medicine repeated.

10-30.—Very drowsy ; can scarcely be kept awake.

Repeat the medicine.

10-45.—Refused the medicine, but was persuaded to take it; quite drowsy; conjunctiva injected. Pupils slightly dilated, vomited up the draught in a couple of minutes after taking it.

11-15.—Pulse full and bounding, but compressible ; is completely under the influence of the brandy he has taken. Has removed the ligatures from the limb.

The Potash warm bath continued. Repeat the medicine.

11-20.—Vomited up the draught.

Repeat the draught.

11-45.—Very drowsy, speech thick, prevented from going to sleep.

Repeat the draught.

12.—Is unconscious; difficult to be aroused, owing to the effect of brandy.

Repeat the medicine.

1 A. M. 28*th*.—Speech same, quite stupid.

Nil.

1-30.—After much shaking, he opened his eyes, and complained of giddiness, and also pain in his leg.

2-20.—Passed eight ounces of straw-coloured urine, alkaline. Specific gravity 1002.

Repeat the medicine.

3.—Very restless, complains much of pain in the wounded limb.

Nil.

4.—Repeat the draught.

6.—Has been sleeping since last report; free from pain, but complains of headache. Potash bath to be discontinued.

Nil.

7.—Has been dozing off and on, complains much of headache and a dragging pain in the left leg. To have some rice conjee. Repeat the draught.

12 M.—Slept for several hours and is now nearly free of headache; no pain in the wounded part.

Repeat the draught.

6 P. M.—Has been complaining of hunger, partook of conjee freely during the day; no complaint.

Nil.

29*th*.—Well. Discharged.

Remarks.—This case is of considerable interest in establishing the benefit of the potash treatment for snake-bite. That the man *was* bitten by a snake I fully believe, although only one point of the fang was visible at the point where the blood was dry and adhering to the wound; but even this was afterwards imperceptible when the wound was washed. We need not feel surprised at this, for the fangs of a cobra are as fine and sharp as needle-points, and the wounds inflicted by them are very fine and invisible to the naked eye, unless recent and bleeding. In the foot of a native the skin is very thick, and it seemed to be particularly so in this instance. The only doubt I have in my mind is, was it a cobra he was bitten by? The patient is an intelligent native, and he readily and distinctly asserts that it was a cobra, which he recog-

nized by the expansion of the hood; and knowing, as I do, how these reptiles abound about Madras, and taking the locality where he was wounded, together with the time of its occurrence into consideration, the doubt vanishes. In this case suction was not brought into play, and the ligature was not properly put on, till he was brought to my house an hour and a half after he was bitten; and the ligature which I then put on, the patient at first loosened and subsequently removed in the course of some two or three hours, so that the potash and the brandy were the sole treatments relied on, and they have fully realized my confidence in the use of them for snake-bite. I was anxious that the patient should be seen by another Medical officer. I wrote to Dr. Brockman, Assistant Surgeon, Officiating Superintendent of the Eye Infirmary, asking him to come over; unfortunately that gentleman was ill, and could not attend, and ere I received his reply, it was past 10 o'clock, and at that late hour I was reluctant to disturb any one else.

Art. XXXVII.—*Cases in Practice.* (*Surgical.*) By C. A. Andrews, Esq., Zillah Surgeon, Kurnool.

Amputation of Leg; Osteo-Sarcoma.

Unkamah, Æt. 40, female, Hindoo.—Admitted in June 1867 with enlargement of right foot, which is firm, hard, and has several sinuses from which there is a thin serous discharge. The disease involves the ankle joint.

July 9th.—Amputated the leg immediately below the knee joint, the popliteal artery alone requiring ligature. The bones of the tarsus and the lower ends of the tibia and fibula were found softened, and the whole mass was of a pinkish-yellow colour, homogeneous in appearance.

August 14th.—The case has progressed favorably and the stump is entirely healed, with the exception of an opening caused by the presence of the ligature which remains fast, although forcible attempts at its removal have been frequently made.

October 12th.—Frequent attempts to remove the ligature failed until this morning, when it came away after the employment of very considerable force.

15th.—Discharged.

Wound—Throat.

Berum Sahib, Æt. 20, Musalman, male. Sept. 1st, 1867.—Brought in by the Police at 7½ A. M. with a deep horizontal wound in the throat, about three inches in length; the anterior portion of the trachea is severed; the left carotid and jugular, above which the wound is very deep, narrowly escaped. Treatment—sutures, straps, bandage.

4*th.*—On removing dressings the wound was found completely healed by the first intention.

11*th.*—Detained till now as a precautionary measure. Discharged cured.

Wound—Throat.

Alla Rukee, Æt. 22, Mus. female. September 1st, 1867.—Brought in by the Police with a horizontal wound in the throat about two inches long, deepest on the left side of the trachea, which is exposed, but not severed. Treatment—sutures, strapping, bandage.

4*th.*—Wound healed by the first intention.

11*th.*—Discharged.

These two were sleeping together, a man entered the house, and without the aid of any light, cut their throats, and ran away; I have no doubt from the appearance of the wounds, that they were inflicted by the same hand. A man was taken up on suspicion, but discharged for want of evidence. The narrow escape of the large vessels, and the rapidity with which such severe wounds healed, are remarkable features in both cases.

Wounds—Abdomen.

Dillarah Khan, Æt. 38, Mus., male. September 26th, 1867.—Admitted at noon with the following wounds inflicted by himself while in a state of temporary insanity. One wound on the left side three inches below the ribs, from which omentum is protruding. Two wounds in the right hypochondriac region: one deep, the other superficial. All the wounds are pouch-shaped, about two inches wide, and were evidently inflicted from above with a broad dagger. Returned the omentum with some difficulty, sewed up the wound, and bandaged. Patient rather low from loss of blood and fasting.

℞ Spt. Amm. Arom. ʒ i., Liq. Opii Sed. ♏ xv. stat.

Vesp.—Pulse frequent (96) and sharp, skin hot and dry, tongue dry, is very thirsty.

℞ Cal. gr. ii., Opii gr. ½ omn. 4 hor. Cold water.

27*th.*—In the same feverish condition, not much pain, bowels not open. Slept a little.

℞ Ol. Ricini ʒ iv., Liq. Opii ♏ x.
Aq. Menth. ʒ iv., stat.
Contin. pilul. Conjee.

28*th.*—Pulse 104, not so sharp; skin cool, tongue moist, complains of thirst and oppression in the chest; no tenderness of abdomen; bowels not open. Slept a little.

℞ Ol. Ricini. ℥ i.
Liq. Opii ♏ x. after its operation.

Vesp.—Bowels open, slight tenderness of abdomen on pressure. Continue pills. Conjee.

29*th.*—Bowels moved freely, slight pain on pressure. Pulse 112, sharp; tongue moist, is thirsty.

℞ Spt. Æther. Nit. ♏ xv., Tr. Hyoscyami ♏ x.
Liq. Amm. Acet. ʒi., Mist. Camph. ℥i. *ter die.*

30*th.*—No fever; pulse soft, 104, no pain. Cont.

October 15*th.*—Has progressed favorably since last report, and is now quite well. Discharged.

Wound—Hip.

Cawder Sahib, Æt. 23, Mus, male.—Admitted January 1868 with extensive lacerated wounds on left hip and buttock, caused by the teeth of a tigress, which seized the man while passing over the Muntreal Cunnamah Ghaut, but dropped him when beaten off by his companions. The wounds, which were inflicted four days ago, have a peculiar deep red appearance, and discharge freely offensive purulent matter. He complains of great pain. Condition pretty good.

Condy's Fluid Lotion. Poultice, Ol. Ricini. ℥i.

January 16*th.*—Had fever last night; wounds have the same unhealthy appearance.

Mist. Quin. ℥ iii. every four hours. Cont. lotion.

18*th.*—No fever; passed a restless night; complains of headache; wounds in the same condition.

℞ Lotio. Zinc. Chlorid.
Mist. Salin, ℥ ii. every 4 hours.
Tinct. Opii ♏ x., Tr. Hyos. ♏ x. h. s.

20*th.*—No fever, sleeps well, wounds have a much healthier appearance. Continue.

25*th.*—Rests well, wounds granulating. Continue lotion.

February 18*th.*—Wounds all healed. Discharged.

Fracture of Arm.

Annamah, Æt. 40, Christian, female. February 10th, 1868.—Admitted with the left shoulder tightly bound with small splints and string, and the whole arm below tumefied by the compression. Upon removing the apparatus, the whole of the cuticle from the shoulder to the wrist peeled off, the cuticle of the palm was raised like a bladder, and the dorsum and fingers were covered with bullæ; the rings were deeply embedded in the flesh of the fingers, and the true skin here and there sloughing. The humerus is fractured just below the insection of the deltoid. Accident caused by cart wheel passing over the limb, which was set by a native doctor with the results described above. Patient in good condition, but rather old.

Treatment.—Remove the splints, cut out the rings, place the arm on a pillow, apply lotion of Condy's Fluid. Bark and Ammonia. Morphia at bed time.

February 12*th.*—There is a fœtid purulent discharge from the whole surface of the arm. Not much pain, the fingers are warm. Condition pretty good.

℞ Lotio. Sodæ Chlorinat.
McDougall's Powder dusted on the pillow.
Cont. Bark, Amm. and Morphia. Full diet.

14*th.*—Fœtor of the discharge quite removed. The sloughing portions of the skin are secreting pus in abundance.

Cont. medicine.
Dust the powder over the sloughs.

15*th.*—There is much pain, heat and swelling about the seat of the fracture. I fear amputation will be necessary.

Foment the shoulder. Cont. med.

17*th.*—Pain and swelling at the fracture reduced, skin of hand and forearm beginning to heal.

Cont.

20*th.*—The healing process is progressing favorably, the ends of the fractured bone are kept in apposition by soft pads placed on either side.

Cont.

March 4th.—The arm is quite healed, with the exception of one or two deep ulcers about the elbow, caused by the pressure of the ends of the sticks.

Cont.

19*th.*—Perfect union of the bone has taken place, she is now able to sit up with the arm in a sling, some of the ulcers are still unhealed, but are filling in gradually.

Cont.

April 14th.—The ulcers are all healed, and she has the perfect use of the arm.

Discharged.

Remarks.—The evils of native surgery are here exemplified. I shall relate three cases in which limbs have been lost by the same treatment, and I have no doubt lives are often sacrificed thereby. There seemed to be scarcely a chance of saving this limb, and the very favorable termination was due, I think in a great measure, to the calm and cheerful temperament of the patient.

Amputation—Leg.

Thippah Reddy, Æt. 54, Hind., male. Feb. 12th 1868.—Admitted with disease of the bones of the ankle joint of the left leg, of two years' duration. The ankle is partially dislocated, and the foot stands up at an acute angle. The patient is old and extremely emaciated. Suffers much from pain in the diseased part.

Bark and Amm., Morph. at night.
Poultice. Good feeding.

March 5th.—Has improved very slightly in condition, is anxious to have the leg off.

℞ Arrack ℥ ss.
Spt. Am. Arom. ʒ i.
Mist. Camph. ℥ i. stat.

Placed the patient under chloroform and amputated below the knee—bore the operation very well.

Rep. Haust. Arrack C., T. Opii. ♏ xx.

6*th.*—Slept pretty well. No unfavorable symptom.

Bark and Amm. Opiate at night.

April 20th.—Stump quite healed, general condition much improved. Discharged.

Amputation—Leg.

April 27th, 1868.—Nagah, Æt. 30, Hind., male. Admitted with sarcomatous disease of the right foot, involving the ankle joint. The disease has been in progress about two years. Is debilitated.

Bark and Amm. Full diet.

May 2nd.—The leg was amputated below the knee under the influence of chloroform. Two arteries ligatured.

Tinct. Opii. ℥ss.
Spt. Am. Arom. ℥ss. stat.

4th.—Has fever, with heat and swelling of the stump.

Mist. Salin. Cold water dressing.

July 6th.—Stump quite healed. Discharged.

Strangulated Hernia—Operation.

T. Soondarum Pillay, Hind., male, Æt. 34. May 19th 1868.—Admitted with oblique inguinal hernia of left side which has been strangulated three days, the tumour is about the size of the fist and feels solid. Pulse sharp and frequent, bowels confined for the last three days, is troubled with vomiting and much pain. Warm bath, enemata, taxis. The hernia not being reducible by taxis, inversion of the body, &c., he was placed under chloroform, and the taxis again applied without success, the knife was therefore resorted to, the sac was opened and stricture divided without any difficulty and the bowel returned, after which he seemed much relieved.

℞ Tinct. Opii. ℥ ss., Sp. Amm. Arom. ℥ ss.
Stat et. rep. h. s.

20*th.*—Passed a good night, bowels have been freely opened, and he seems very comfortable.

Repeat Opiate.

21*st.*—Bowels open this morning, is rather feverish.

Mist. Salin Co. ℥ i. every 4 hours.

22*nd.*—Tongue dry, great thirst, pulse frequent and jerking, skin hot, bowels confined. Has tenderness all over the abdomen.

Ol. Ricini. ℥ vi. stat., Cal. gr. i., Opii. gr. ¼ every 4 hours.

Imperial drink.

23*rd.*—Abdominal tenderness subsided, scrotum hot, swollen and painful. Bowels freely open, passed water. Pulse 90, soft and calm, tongue dry, still thirsty.

Cont. Mist. Salin. Cold water dressing.

24*th.*—Scrotum more swollen, had fever all night. Pulse 92, complains of burning pain in the wound and scrotum.

Continue medicine. Warm fomentations.

25*th.*—Left side of scrotum fluctuating, right side hard and congested, had fever in the night, and was slightly delirious. Pulse 102, tongue dry and harsh, great thirst, bowels not open. Opened left side of scrotum, evacuated some straw-colored serous fluid, relieved the congestion of right side by punctures, dark blood flowed freely.

Ol. Ricini ℥ iv., Rep. Pil. Mist. Salin. Co. ℨ i., every 4 hours.

Opiate at bed-time.

26*th.*—Passed a bad night, is delirious. Pulse small and frequent, tongue dry, skin hot, there is a thin serous discharge from the wound.

℞ Amm. Carb. grs. v., Tinct. Cinch. ℥i., Dec. Cinch. ℨi. *ter die.*

27*th.*—Died at noon.

Amputation—Foot. Syme's Method.

Venkamah, Æt. 35, Hind., male. July 14th, 1868.—Admitted with disease of the right foot, which is enlarged and has several sinuses about the dorsum and toes, the ankle joint is apparently not involved. States that the disease commenced about two years ago, and attributes it to a violent dust-storm which occurred about that time. Is weak, but not emaciated.

Cal. and Jalap. Bark and Ammonia.

22*nd.*—Amputated the foot by Syme's method, under chloroform, of which he took ℥ xii. A small quantity of reddish purulent matter gushed out at the first incision, a good flap was obtained from the skin of the heel.

Opiate. Carbolic Acid dressing.

Examination of foot.—This proved to be the fungus disease or Chionyphe Carterii, a number of black granules

buried in mucilaginous matter were found in the soft parts. All the bones, including those entering into the formation of the ankle joint, were carious, but the lower ends of the tibia and fibula, which were sawn off, were still healthy.

30*th.*—Has progressed favorably so far, but the heel flap seems inclined to slough.

Cont. Carbolic Acid dressing, Extra diet.

August 25*th.*—A portion of the flap has sloughed away, leaving a healthy granulating surface. There is enough left to make a good stump.

Sept. 16*th.*—Progressing very slowly but favorably.

Oct. 7*th.*—Stump healed and very satisfactory. Supplied with a kind of boot with straps fastening to a collar above the knee. Discharged.

Amputation—Leg.

Narrainapah, Æt. 38, Hind., male. Aug. 23rd 1868.—Admitted with gangrene of the right foot, the fleshy portion of the dorsum of the foot and toes has sloughed away, leaving the metatarsal bones exposed, the phalanges of the middle toes have dropped off. States that the disease commenced eight months ago with a burning sensation in the foot and the formation of a blister beneath the toes. He is greatly emaciated, the heart is healthy, and there is no apparent cause for the disease.

Bark and Amm., Morphia at night, Carbolic Acid Lotion.

Sept. 9*th.*—Is improved in condition and anxious to have the leg off.

The leg was amputated below the knee, and the posterior tibial artery was found to be obliterated ; it was impossible to say how, as the cause of obstruction was above the point of amputation. The anterior tibial artery was intact and was secured. States that he never had any pain or swelling about the knee.

Amm. and Laud. Carbolic Acid dressing.

14*th.*—Is weak and low, and has diarrhœa, stump tolerably healthy.

Extra diet. Astringents.

16*th.*—Diarrhœa stopped, bed sores are forming; is still greatly emaciated.

Bark and Ammoniæ. Carbolic Acid dressing.

23*rd.*—The anterior flap is sloughing.

Cont.

October 6*th.*—The point of the tibia projects through the portion of flap which has sloughed away; opened the flap, and sawed off the projection.

17*th.*—Has now a good stump, nearly healed, bed sores healed; is gaining flesh and strength.

Cont.

November 14*th.*—Is quite well. Discharged.

Wound—Abdomen.

Adda Ramanah, Hind., male, Æt. 25. October 16th, 1868.—Admitted with a punctured wound in the abdomen, about one inch in length, vertical in direction, just above and to the left side of the umbilicus, from which a portion of the omentum is protruding, which is hardened and inflamed, and could not be returned without exciting serious inflammation. The abdomen is tender and rather hard, pulse good, tongue clean, skin cool, countenance natural. States that he had a fit last night and fell upon a sharp pointed instrument. Placed a ligature round the omentum, strapping and oiled lint dressing.

Calomel and Opium. Mist. Salin.

17*th.*—Slept well; tenderness of abdomen less. No fever.

Cont. Salin.

18*th.*—Bowels confined, slight tenderness remains; otherwise doing well.

℞ Ol. Ricini ʒ iv., Mist. Acaciæ ʒ iv. stat.

19*th.*—Doing well. Removed the protruded omentum, and closed the wound.

November 3*rd.*—Is quite well. Discharged.

Amputation—Leg.

Chellamanah, Æt. 36, Hind., male.—Admitted November 16th, 1868, with enlargement of the right foot, in which ar

several fistulous openings communicating with diseased bone. There is a thin sanious discharge, in which black granules like gunpowder occasionally appear (Chionyphe Carterii). He is weak and emaciated.

Bark and Ammonia. Carbolic Acid lotion.

December 16*th.*—The patient's health being somewhat improved, he was placed under chloroform, and the leg amputated below the knee.

T. Opii., Spt. Ammoniæ. Carbolic Acid dressing.

20*th.*—There is considerable tumefaction about the stump; otherwise doing well.

26*th.*—Progressing slowly.

February 27*th.*—The stump had been healed some days, and the patient was only waiting to get accustomed to his wooden leg before proceeding to his home, when he was seized with cholera and died.

Traumatic Tetanus.

Yenkamah, Æt. 12, Hin., female. Nov. 27th, 1868.—Admitted with general tetanic spasms, the result of extensive burns of the left lower extremity and hand, which occurred two days ago. The whole of the lower limb is deprived of its cuticle, and in a sloughing condition. The child is in great agony. Bowels confined, skin hot, pulse frequent, thirst great, mouth nearly closed.

Turpentine Enema. Carron oil dressing.

Tinct. Cannabis ♏ v., Mist. Salin. ℥i. om. 3 hor.

Vesp.—Bowels moved freely. Slept for an hour, fever, spasms continue.

Cont. Mist.

28*th.*—No sleep, less fever, skin moist, spasms continue.

Calabar bean Extract gr. $\frac{1}{3}$ every two hours; the effect to be watched.

Vesp.—Spasms slightly abated for two hours, but returned; fever abated, pupils contracted, pulse intermittent, skin in a state of cold clammy perspiration.

Omit Extract. Cont. T. Cannabis.

29*th.*—The effects of the Extract passed off, and she remained in same tetanic condition till 3 P. M., when she expired.

This case is reported on account of the Extract of Calabar bean being employed; it was a most unfavorable case, but I have since treated three cases, two of traumatic and one of idiopathic tetanus, with the drug, and in no case did it appear to exert any permanent beneficial effect.

Wound—Lung.

Chinnakah, Æt. 23, Hind,, female. December 4th, 1868.—Brought in by a constable with several wounds about her body, inflicted with a dagger by her husband. The wounds, seven in number, are all severe, but one only has penetrated a vital part: it is situated between the left scapula and the spine; it is an inch and a half long, and half an inch wide, depth unknown; air bubbles are forced out at each expiration, showing that the lung is wounded. Pulse frequent and small, skin hot, respiration hurried. Ligatures and strapping.

Cal. gr. v., Opii gr. i. stat.
Ol. Ricini ℥ iv., Aq. Menth. ℥ i. mane.

5*th.*—Slept tolerably well, skin hot, tongue furred, pulse 140 and sharp. All the wounds very painful; the wound communicating with the lung is closed.

Mist. Salin. Co. ℥ iss. every 3 hours.

Vesp.—In the same feverish condition; respiration hurried.

Morphia gr. ½ h. s. Cont. Salin.

6*th.*—Respiration less hurried, pulse 126, not so sharp; tongue furred, bowels open, wounds healthy.

Cont. Salin. Pil. Hyd. gr. v., P. Dover. gr. v. h. s.

7*th.*—Slept well. Pulse 104, is now cool and calm, but she had fever with hurried respiration and accelerated pulse from 1 till 8 P. M. yesterday. Chest resonant, and respiratory sounds natural.

Cont.

8*th.*—Had fever again yesterday afternoon; is now cool and calm.

Quin. Sulph. gr. iii. 4 hours.

10*th.*—No fever. Pulse 98, wounds healing.
Cont. Quinine.

18*th.*—Wounds slowly healing; is able to sit up.

January 9*th.*—Is quite well. Discharged.

Burns—Amputation—Tetanus.

Soonkadoo, Æt. 35, Hind., male. April 2nd, 1868.—Was brought to hospital this morning suffering from severe injuries caused by an explosion of gunpowder while blasting stone in the canal. The right hand is completely shattered, and the left is severely injured, the skin of the palm having been destroyed. The left eye is completely destroyed, the right much inflamed; no vision. The whole of the left side of the body is charred and blackened, skin hot and dry, pulse frequent and bounding. Is conscious but unable to speak.

℞. Spt. Am. Arom. ʒ ss.
Tinct. Opii ♏ xx.
Mist. Camph. ℥ i. stat.
Mist. Salin. Co. ℥ i. every 3 hours.
Opii gr. ii. h. s. s.
Cold Lotion. Congee.

3*rd.*—No fever, pulse good; is very quiet. Amputated the right hand just above the wrist.

Cont. Opiates, Saline, Lotion.
Poultice to left hand. Congee.

I delivered over charge to Dr. Williamson on this day, and extract the following from his notes.

4*th.*—Doing well.

7*th.*—No fever, appetite good, bowels confined, sight of right eye has returned, left suppurating. There is a little purulent discharge from the amputated stump. The cuticle is peeling off the left side of body, leaving an ulcerated surface. There is a large slough in the left hand, with here and there attempts at granulation.

Ol. Ricini ℥ i. Carbolic Acid dressings. Poultices.

8*th.*—Had sympathetic fever last night; condition of left hand will, I think, necessitate amputation.

Salines, broth and congee.

15*th.*—Was progressing favorably up till 4 P. M. yesterday, stump and left hand granulated, burns showed a healthy surface, and apparently all was well, when he complained of pain and stiffness of the lower jaw. This morning he is unable to swallow or open the jaws, has spasmodic twitching when he attempts to do so; discharge from stump sanious, from left hand healthy.

Tinct. Cannabis Ind. ♏ xx. every 3 hours.
One measure arrack. Straps and cold lotion.

17*th.*—No spasms, except when he attempts to swallow; can take fluids with difficulty; left hand granulating and healthy, stump dry, bowels regular.

Poultice to stump. Cont. Cannab. Arrack; as much broth and conjee as he can take.

19*th.*—The spasms have extended to the back and legs, stump healthy, but very little discharge. A slough has separated from the left hand, exposing the proximal phalanges of the second and third, and the distal phalanx of the index finger. These were amputated. The sight of right eye, which returned for a few days, is gone. Burns all but cicatrized.

Ext. of Calabar bean gr. $\frac{1}{8}$ every 4 hours.

21*st.*—Died.

Pterygium.

Cassim Saib, Æt. 40, Mus., male. August 23rd, 1869.—Admitted with pterygium of both eyes; the growth on the right eye extends to the centre of the cornea, and obstructs the vision. Dissected the growth from the right eye.

September 15*th.*—The cornea is now quite clear and bright.

Dixon states, (Diseases of the Eye, p. 13), "According to "my own experience, the apex never extends so far over "the cornea as to obstruct the area of the pupil."

Osteosarcoma—Amputation—Leg.

Lunleegah, Æt. 30, Hind., male. September 1st, 1869.—Admitted with great enlargement and deformity of the right foot, in which are sinuses above and below, communicating with diseased bones, from which there is a fœtid sanious discharge. Is much emaciated aud complains of

severe pain at night. States that the disease commenced about four years ago, with the appearance of a swelling on the dorsum of the foot, which suppurated, and has remained open ever since.

Bark and Ammonia. Nitric Acid lotion. Full diet.

15*th.*—The patient being somewhat improved in condition, the leg was amputated below the knee under chloroform.

℞ Spt. Am. Arom. ℥i., Tinct. Opii ℥ss. stat.
Carbolic Acid dressing.

30*th.*—Stump healing rapidly, condition much improved.

October 9*th.*—All healed but the track of the ligature.

20*th.*—Was about to be discharged, apparently cured, when pain and swelling of the stump occurred, followed by the opening of a sinus in the cicatrix of the flaps, down which a probe passes about two inches, but does not touch bone.

Zinc Injection.

November 5*th.*—The sinus is filling up.

10*th.*—Another sinus has opened up, through which denuded bone can be detected.

Cont. Inject.

27*th.*—Sinus filling up, discharge healthy and decreasing.

December 6*th.*—Discharged.

Wound from Explosion—Amputation—Shoulder Joint.

Bala Saib, Æt. 22, Mus., male. December 6th, 1869.—Admitted with compound comminuted fracture of the lower half of the right humerus, from the bursting of a gun while in the act of shooting. The accident happened three months ago, and he has been under native treatment ever since. The whole arm is much swollen, the forearm œdematous, cold, and without power of motion. There are two large wounds just above the elbow, on the anterior and posterior aspects, from which there is a free discharge of pus; splintered bone is felt at the bottom of these with the probe. There is also a sinus in the upper half of the arm on the anterior aspect, and another on the chest, just outside the margin of the pectoral muscles, from which there is a free discharge of pus. These latter do not appear to com-

municate with bone, and, it is stated, were not caused by the explosion, but appeared some time after; they are probably the result of extensive inflammation, the burrowing of matter, or the treatment to which he has been subjected. The patient is in a very anæmic and emaciated condition.

Bark and Ammonia, arrack, meat and bread.
Warm dressing.

12*th.*—The patient not appearing to gain strength, I determined to operate this day. He was placed under the influence of chloroform, and with the assistance of Dr. Williamson, who controlled the artery, I proceeded to amputate the arm about four inches below the shoulder joint. The outer surface of the bone appeared healthy, but directly the saw penetrated the shell, the bone snapped in two, and the medullary canal was found to be occupied by thick purulent matter, extending right up to the head of the bone; the external flap previously made was therefore extended upwards, the knife carried over the head of the bone, dividing the tendons and ligaments, was brought down to form the inner flap; the bone was then removed from the socket, the flaps shortened, and two arteries, the axillary and subscapular, were secured by ligatures; a few sutures, and the application of carbolic acid dressing, completed the operation, which was borne very well by the patient. The amount of blood lost was small considering the nature of the operation, the axillary artery being controlled with great steadiness by Dr. Williamson. The patient was very faint and low after recovering from the chloroform, but soon rallied.

Spt. Amm. Arom. ℥ i., Tr. Opii ♏ xx. directly, and repeat when necessary.

Vesper.—Very weak, but doing well.
Milk diet.

13*th.*—Did not sleep, but was quiet; very weak, but no bad symptom.

Milk and broth.
Cont. Amm. and Opium.

14*th.*—Had a little fever last night; sinus in the pectoral region discharging thin purulent matter. Stump healthy.

Quinine gr. iv. every 3 hours. Arrack, meat, bread and milk.

Filled the sinus with lint in Carbolic Acid lotion.

15*th.*—No fever, slept better, pulse good; seems altogether stronger.

Continue.

26*th.*—Has been making steady progress; adhesion between the flaps has taken place, and there are only one or two small openings in the line of incision, but an abscess has formed at the outer border of the scapula, which has opened and given exit to some healthy pus.

Cont. Quinine, *ter die.*
Arrack and diet as before.

January 1*st,* 1870.—There is still a purulent discharge from the abscess and the pectoral sinus; is thin and anæmic.

Ferri et Quin. Citrat. gr. v. *ter in die.*
Cont. diet, &c.

13*th.*—General health much improved; there is still a purulent discharge from pectoral sinus.

Zinc Injection. Cont. medicine, &c.

February 1*st.*—The stump has completely healed, with the exception of two minute orifices, one at each end of the line of incision, and has a very good appearance; sinus still open; the patient is getting stout.

Cont.

14*th.*—The sinus is still open, all the rest healed. A change of air to his native place will probably have a beneficial effect.

Discharged. To report himself in a fortnight.

Compound Fracture of Leg—Amputation.

Galligauloo, Æt. 8, Hind., male. December 22nd, 1869.—Admitted with complete mortification of right leg; line of demarcation about an inch below the knee, sinuses extend upwards above the joint; both bones broken. The child met with the accident three months ago, and the gangrenous condition of the leg has been caused by the application of sticks bound tightly on by a native practitioner. Has fever.

Mist. Salin. Carbolic Acid dressing.

25*th.*—Dr. Williamson, in my absence, amputated the thigh in the lower third, by anterior and posterior flaps.

Tinct. Opii. ℥. iv. after the operation.
Carbolic Acid dressing.

28*th.*—There is some discharge of pus from the wound: has fever daily, accompanied by a dry cough.

Quinæ Sulph. gr. ii. *ter die.* Salines.

Carbolic Acid dressings.

31*st.*—No fever, slight cough; the edges of the wound have a tendency to slough.

Mist. Quinæ ℥ ss., Tinct. Camph. Co. ♏ v. *ter die.*

Strong Carbolic dressing.

January 9th, 1870.—The thigh has been hot and swollen for two or three days; fluctuation is now felt in the posterior flap. Opened the abscess, and evacuated about 4 oz. of healthy pus.

Cont. Mist. Poultice.

29*th.*—The stump is nearly healed; the child is rather cachectic, and has a frequent cough.

Fish Liver Oil ℥ ii. *ter in die.*

February 9th.—The stump has quite healed; cough much better. Discharged.

Compound Fracture of Leg—Amputation.

Goodoomah, Æt. 43, Mus., female. January 21st, 1870.—Admitted with compound fracture of both bones of the left leg: the ends of the broken tibia protrude through the wound, and the whole of the leg is in a sloughing condition; upon pressing any part of the leg, there is an exudation of very offensive thin ash-colored purulent matter from the wound. The fracture was caused ten days ago by the patient being trampled upon by buffaloes, and she has been brought into her present condition by native treatment. Tongue clean and moist, pulse weak and frequent, skin warm, suffers much from pain and want of sleep. Condition stout, but lax.

Bark and Amm., Morph. at night. Carbolic Acid dressing.

30*th.*—The slough has become so extensive, that there is no chance of saving the leg. Amputated in the lower third of the thigh; four arteries required ligature. The patient objected somewhat to the operation, and requested that her throat might be cut instead, as her life was useless with

one leg, but her friends desired it. After the operation, cried and fretted very much about the loss of the leg.

Tinct. Opii. ℥ ss., Sp. Amm. Arom. ℥ ss. directly, and as required. Carbolic Acid dressing.

31*st.*—Slept better than she has done since the accident; is fretting and crying about the loss of her leg. Stump in good order.

Broth and conjee. Opiate at night.

February 1*st.*—Slept well; still fretting.

2*nd.*—Removed the dressings; edges of flaps in apposition, and beginning to heal. There is a dark sanious discharge from the inner angle of the wound; seems very sensitive to pain when the stump is touched. Pulse small and frequent.

Continue.

3*rd.*—The Dresser states that about one oz. of blood flowed from the inner angle of the wound this morning; there is no appearance of bleeding now, no fulness of the stump, nor any discharge on pressure; the patient is very low; skin cold, pulse very weak, is drowsy and disinclined to speak.

Hot brandy and water every two hours till reaction sets in. Stump raised and bandaged.

Injected Tinct. Ferri. Mur.

Vesper.—Remains in the same condition. No further bleeding; will not take nourishment.

4*th.*—About three ounce of dark sanious fluid exuded from the stump on pressure this morning, but no fresh blood; the state of partial collapse has passed away. Is again fretting, and takes nothing but congee.

Rep. Inject. Ferri. Perchlor. 1 to 8.

Brandy and Ammonia, broth.

7*th.*—A thin ash-coloured purulent fluid, similar in character to that formed in the leg previous to amputation, is now being discharged. Skin warm, tongue dry, pulse weak; refuses broth and medicine, and expresses a wish to die.

Injected Carbolic Acid lotion 1 to 25.

9*th.*—The wound is discharging healthy pus, and there would be a good chance of recovery, but that she persistently refuses to take nourishment.

Cont. Inject.

10*th.*—Her friends have decided to take her home. Discharged.

I learnt subsequently that she accomplished her wish, and died the day after her removal.

SALE OF POISONS.

THE result of the reference to the Supreme Government, made by the Government of Madras in July 1864, on the subject of the legislative restriction of the sale of poisonous drugs, was not satisfactory. The Governor General in Council was not "prepared to propose any general legislation, such as has been suggested by the Government of Madras." A copy of a letter addressed to the Government of the North-West Provinces was "transmitted," apparently intended as a justification of the refusal to take up the subject, and really showing that it had not been seriously considered at all. The letter is a reply to repeated applications from the Lieutenant Governor N. W. P. to the Government of India, for special legislation or other action directed towards the suppression of "theft or robbery by poisoning," and labors to show that the Penal Code, if efficiently applied, is amply sufficient for the purpose. It declines to attempt to restrict the sale of poisonous drugs, because *Dhatura* and *Khareeara* grow in every hedge! Now, so far as our experience goes, the former is rarely used for homicidal purposes, and the oleander seldom used at all. In Europe hemlock and nightshade are common weeds, but it has been thought prudent, nevertheless, to make the purchase of arsenic and oxalic acid difficult. The argument may have been a good one as against attempting to suppress robbery by hocussing with dhatura by means of restrictions on the sale of poisons generally; but it does not touch the question of the expediency of diminishing the facility with which the means of committing suicide and murder may be obtained. Unfortunately the local Government were content with the consciousness of having done their duty, and did not care to be critical of imperial logic. It was deemed "inexpedient at present to legislate on the subject;"

and the question did not come up again until nearly a year had passed. On this occasion Bombay moved in the matter and Madras was obstructive. In 1864 fifteen or sixteen children of the Byculla schools were poisoned by arsenic; not, however, fatally. Mr. Cassels thereupon moved for leave to introduce a bill into the Bombay Legislative Council "for regulating and restricting the sale of poisons." In moving for leave he called the unrestricted sale a "growing evil," adding, that in a country "where poison grows rankly in every hedge-row, it was impossible altogether to control it," but that at least what legislation had done in England and other countries might be attempted in India. Mr. Cassels obtained leave to introduce a bill to amend the law regulating the sale of poisons in the Mofussil and to extend restriction to the city of Bombay. He was unable to proceed with it, but it was taken up by another Member of Council, with what result we are not informed. It differed from the draft suggested for Madras only in providing for the coloring of white arsenic with soot or indigo; and in having a schedule of poisons instead of leaving it to the Governor in Council to publish a list of drugs to which the Act should apply, and to alter it from time to time as circumstances changed. The mere possession of poisons was not made penal. This Schedule is the weak point of the Bill, and probably contributed mainly to its unfavorable reception in Madras. It includes eighteen vegetable and sixteen mineral drugs, some of which (as sulphuret of antimony, acetate of lead, and sulphates of copper and zinc) can scarcely be called poisons at all, others (as dhatura and croton tiglium) which may be obtained any where, and the sale of which it is useless to restrict; and some (as the strychni) which are used for common purposes, and can scarcely conceivably be employed for homicidal, or even suicidal, intent. Arsenious oxide appears under three different

names; the red and yellow sulphides of arsenium under two each—these latter compounds, whether natural or artificial, being poisonous only in such considerable doses as to render their inclusion in a Schedule of poisons undesirable, where simplicity is most important.* What became of this Bombay Bill, as regards Bombay, we do not know: but a copy of it was sent, by the General Superintendent of Operations for the suppression of Thuggee and Dacoity, to the Government of India, in September 1865, with a letter, in which he states that he had from time to time urged the adoption of similar measures upon the Supreme Government. "The prevalence of the crime of poisoning in many directions," he says, "justified me in the step; and although I may not say that a similar catastrophe [to the Byculla poisoning] is necessary to arouse the same attention to the subject the serious extent to which the crime has reached, and its unabated progress throughout the country will absolve me for enquiring, *why*, under as dire a necessity, the same and even greater restrictions should not be imposed by the Supreme Government every where." The greater stringency which he suggests (besides the organization of a special detective police) is the rendering the *possession* of deleterious drugs and not the sale of them only, penal, except by licensed vendors or other persons specially permitted to have them. He mentions the facility with which vegetable poisons can be obtained from nature, and minerals from the "travelling quacks who numerously roam the country vending, unquestioned, every noxious thing." Rendering possession of poisons penal, "however easily it might often be evaded, would, at least, have the effect of checking the crime

* We know of one case in which a native sulphide of arsenium appeared to have been forced into a child's month with intent to poison, and to have produced the ordinary symptoms of arsenical intoxication.

of poisoning committed from malice, or for the purpose of robbery, or for procuring abortion ; while those who required the drugs for medicinal or honest purposes would suffer little from the mere inconvenience of having to seek the required permission to possess them." The urgency of this experienced officer induced the Government of India to take up the subject. His letter and the Bombay Bill were sent to our local Government with a request for their opinion whether a measure of the nature suggested "would be likely to be productive of good, without proving at the same time an engine of oppression." Accordingly the Principal Inspector General of the Medical Department (Dr. Shaw), the Inspector General of Mofussil Police (Mr. W. Robinson), and the Advocate General (Mr. J. D. Mayne), were requested to "form themselves into a Committee and submit a joint report, showing the present state of the Law regarding the sale of poisons, and of what amendment, if any, it is susceptible." The addition of the Coroner and the Chemical Examiner to the Committee would not, perhaps, have weakened it, and might not improbably have modified the conclusions at which it arrived. The Report we shall examine on a future occasion. For the present it will be sufficient to say that it was unfavorable to any attempt to restrict poisoning by special legislation ; and that the Madras Government, which not long before had been so fully persuaded of the necessity for such legislation that they were only deterred from effecting it by their conviction that the question was of such exceeding importance that it should be taken up by the Government of India, now concurred with the Committee and did *not* "consider it advisable to restrict by general legislation the sale and possession of poisons."

THE TENACITY OF THE VACCINE VIRUS.

WE have been favored with the following remarks by Dr. Shortt, the Superintendent General of Vaccination, upon the supposed possibility of removing vaccine lymph from the punctures, immediately after insertion, by washing with salt and water or other detergent. We are acquainted with one case of a prisoner who died of variola after vaccination by a careful Dresser, and whose mother was reported to have washed the insertions with salt and water. The lancet was the instrument used. The possibility of destroying the virus after efficient insertion will become a question of considerable importance some day when vaccination has been made compulsory; and we are glad that Dr. Shortt has made it the subject of experiment.

"It used to be the habit of vaccinators, to account for failures after operation, to say that the people were in the habit of washing out the vaccine lymph from the insertions, and that they also frequently applied a solution of common salt to the part to destroy the vaccine virus. Some of my assistants have made a similar report by stating that the people who were averse to vaccination, but, through the persuasion of the village officials, reluctantly submitted their children to the operation to satisfy them, would immediately after wash out the vaccine lymph from the insertions. Having had doubts on the subject, I determined to put it to a practical test, and on the 8th of April last, at $8\frac{1}{2}$ A. M., I took four of the children assembled at the Vaccine Depot, Madras, to be operated on, whose ages ranged from 8 months to 2 years. The two first children as soon as they were vaccinated had their arms, where the insertions were made, well washed with soap and water, and the parts dried with a clean towel. The two other children were operated on in like manner, and after

their arms were washed and dried, a saturated solution of common salt was freely applied not only to the insertions, but to the whole surface of the arm, and the same allowed to dry by evaporation. On the fifth and eighth day after the operation these children were examined by me. Of the first two children, whose arms were simply washed with soap and water, one had two vesicles, one on each arm. Of the two others who, in addition to the washing had salt and water applied to the insertions, one had five, two on one, and three on the other arm, and the other had four vesicles, two on each arm, and in every one of these four children the vesicles were large and well-formed, shewing the genuine characters of the cow-pox. It should be said that in each of these subjects six insertions, three on each arm, were made, and for the failure of some of the insertions I can only account by the nervousness of the vaccinator who did not apply, I think, a sufficiency of the vaccine virus to each of the insertions at the time of operation. The vaccinator was not aware of my object, and seeing me come suddenly and call on him to operate on a few children, seems to have put him out, at least I thought so at the time, from his manner. But the success was notwithstanding perfect as regards the disease itself, and I believe with the use of the needles as a vaccinator, and the lymph once fairly inserted into the skin, no subsequent washing or other application can ever destroy the vitality of the disease; it is possible with the lancet where a cut is made to wash out the vaccine lymph soon after insertion, but this can never happen with a needle, when used; for the skin around the insertion immediately after the operation swells and completely shuts in so much of the vaccine lymph as may have entered through the points of the needles. I believe as a vaccinator the needles are very efficient if only care be taken to see that the

points are well dipped into the vaccine lymph ere inserted at the time of operation, and if this be attended to, the failure from vaccination would be nil."

MEDICAL EDUCATION IN CEYLON.

FOR a period of nearly ten years, the Madras Government has been cogitating a scheme of professional education for the native medical practitioners of the country, but up to this time, the only outcome has been a good deal of report-writing, and a postponement of the question until the happy day arrives when the charges of education and sanitation are to be defrayed out of local funds.

While however we have been content with a folding of the hands under the difficulties which budget deficits impose upon the country, the Ceylon Government has actually made a beginning, and established a Medical School.

We note with satisfaction a peculiarity of this Institution, that it starts with the assumption that a medical training, like all other technical teaching, is a thing worth paying for. The fee of £ 2 or twenty Rupees for each session is not extravagant, nor likely to debar respectable and well educated young men from joining the classes. At the same time, the principle that a medical education is of some value to the possessor is maintained. Orientals, like all other people, are inclined to value a thing in proportion to what it has cost them in money or sacrifice to obtain, and we think the Ceylon Government has acted wisely in establishing a fee for admission to the profession. It will have to take care, by and bye, that the trained licentiates in medicine are empowered by law to claim reasonable remuneration for professional services, and that the un-

qualified, after a certain date, are debarred the privilege, and then the medical profession in Ceylon will meet with the recognition which is justly its due.

We subjoin a Prospectus of the Ceylon Medical School, and cordially wish it all success.

"THE Ceylon Medical School is designed to impart to the Native youths of this Island a practical, sound, and safe knowledge of Medicine and Surgery; such as will enable them to engage in private practice, or fill subordinate posts in the Public Service. It is also hoped that, through its instrumentality, the benefits of the modern rational system of medicine, founded on a knowledge of the structure of the human body, will be placed more extensively within the reach of the people than it is at present.

The fact of the extensive prevalence of loathsome disease in the Island, and the existence of much misery and suffering on this account, among the Natives, especially of the interior, having been lately pressed on the attention of Government, the desirableness of affording more efficient Medical assistance to the inhabitants has been considered among the measures for improving the sanitary condition of the country. The adoption of a plan for inculcating a knowledge of medicine to the Natives of this country, on sound and rational principles, appears to be one of the means best calculated to benefit the people.

It is therefore proposed to establish a Medical School, in which the system of instruction would be founded on a proper basis of anatomical knowledge. The Institution is intended chiefly for the Natives of the country; but no class is to be debarred from its advantages. The instruction will be communicated through the medium of the English language. The standard of knowledge required for admission into the school will not be high, and will comprise reading and writing English, reading and writing Singhalese or Tamil, and a knowledge of Arithmetic. In the case of those who do not know one of the Vernacular languages, some knowledge of Latin will be required.

A fee of £2, payable in advance, will be required from each Pupil at the commencement of every Session.

This fee must be paid on or before the 1st June in each year.

It may be remitted under special circumstances, with the sanction of the Governor only.

It is not intended to limit the number of pupils. They will form a class whose education will extend over three years. Classes in each of the subjects taught will afterwards be formed, according to the judgment of the Principal, in consultation with the Lecturers.

The Principal and Lecturers will be selected from the members of the Civil Medical Department by the Principal Civil Medical Officer, and their appointments sanctioned by Government."

Curriculum of Study.

First Year.	Second Year.	Third Year.
Descriptive and Surgical Anatomy.	Descriptive and Surgical Anatomy.	Surgery.
General Anatomy and Physiology.	Materia Medica.	Medicine.
Surgical and Medical Practice.	Surgery.	Midwifery.
Materia Medica, including Botany and Chemistry.	Medicine.	Surgical and Medical Practice.
Dissections.	Surgical and Medical Practice.	Dissections.
Dispensing.	Dissections.	
Vaccination.	Vaccination.	

ANALYSIS OF WATER.

THE Government of India has sanctioned the measures necessary for the systematic analysis of waters in this Presidency, and we expect that orders on the subject will soon be issued. We understand that the Committee nominated to report on the best method of carrying out the directions of the Secretary of State as to the examination of potable waters, recommended that four officers should be selected for the duty, and suggested the names of Drs. Porter and Macrae of the Local Service, Mr. Nicholson, F.C.S., of the British Medical Service, and Mr. Harvey, the Assistant to the Chemical Examiner. The first two gentlemen are unwilling to leave their present appointments, and we hear that Messrs. Tyrrel and Sinclair are likely to be nominated in their stead. The remuneration is to be full pay of present post, with Deputation Allowance Rs. 5 a day, and actual travelling expenses.

REVIEW.

RECENT CONTRIBUTIONS TO THE LITERATURE OF ASIATIC CHOLERA.

1. *Epidemic Cholera in the Bengal Presidency.* By JAMES L. BRYDEN, M.D., Surgeon Bengal Army, Statistical Officer attached to the Sanitary Commissioner with the Government of India. Calcutta: Office of Supt. of Govt. Printing. 1869.

2. *A Treatise on Asiatic Cholera.* By C. MACNAMARA, Surgeon to the Calcutta Ophthalmic Hospital. London: John Churchill and Sons. 1870.

3. *Statistics of Cholera.* By EDWARD BALFOUR, L.R.C.S.L., Deputy Inspector General of Hospitals, Madras Army. 2nd Edition. Madras: Athenæum and Daily News Office. 1870.

4. *Address to the Bengal Branch of British Medical Association.* By J. MURRAY, M.D., Inspector General Indian Medical Department. Calcutta: *Indian Medical Gazette,* March 1870.

(Continued from page 416.)

DR. BRYDEN not only requires from his readers that they shall accept without question, as a primary truth, the doctrine of an earth-born and aerially transmitted cholera miasm, but that no objection shall be taken to the statistical data he employs in support of his views. As we have objected to the aerial transmission theory on the ground that though meteorology is frequently appealed to, meteorological statistics and records are generally ignored, so with regard to the request that we will take the cholera statistics which Dr. Bryden has compiled, as the true indices of the yearly diffusion of cholera in the country, we are compelled to state, and to give reasons for stating, that statistics

referring to isolated bodies of men living under peculiar conditions, cannot be accepted by the medical profession in proof of the doctrines which Dr. Bryden seeks to enunciate. We have already had some little experience of the value of Dr. Bryden's statistics in regard to the cholera of 1860 in the Central Provinces. In these tables he shows that two cases of cholera occurred at the Hoshungabad Jail, in the valley of the Nerbudda, in the month of May, and the date of appearance, as given by Dr. Bryden, would certainly support his theory of a great invasion in that year of cholera from the eastward; but when we come to learn the whole truth, namely, that cholera was virulent in the locality as early as February, and that no places in the Central Provinces to the eastward had suffered at this early date, it will be at once seen that Dr. Bryden's figures, instead of revealing the actual facts, are positively misleading both to himself, and those who may feel inclined to pin their faith in them.

The single instance we have given is enough to show the fallacy of drawing general conclusions regarding the progress of cholera, from observations of isolated communities, like troops and prisoners in jails. The conditions under which these local communities exist, may either expose them in an inordinate degree to the influences which produce cholera, or may protect them from the influences which fall on the general population. In the case we have noted, it is clear that the special circumstances of the prisoners in the Hoshungabad jail protected them from cholera for months after the free population of the town and native troops had been brought within the range of the epidemic influence. Dr. Bryden says that the general statistics of the population, whenever he has been able to procure them, have never contradicted the indices which his figures of troops and prisoners afford; but it is possible that a more general acquaintance with death rates of native populations may lead Dr. Bryden to acknowledge that in this particular he has somewhat overstated his case. For our own part, we may remark that the incidence of cholera, on troops or prisoners, and on the free population, has been observed to vary so much, that we should never think of generalising as to the condition of the population, from observation of bodies of men circumstanced as are European troops in barracks, and prisoners shut off from the outer world by high walls, and *vice versa*.

In the year 1860, when a very fatal epidemic of cholera

visited the town of Madras, the European troops within the Fort escaped. The same thing occurred in the following year, but quite recently the troops in the Fort have experienced a smart, but distinctly localised outbreak, while the general population of half a million was almost absolutely free. Taking the statistics of the European troops, it might be inferred that the general population in the former case had been free of cholera, and in the latter that it had suffered with severity; but either inference would have been equally opposed to the truth.

In the latter part of the year 1868, epidemic cholera from the north reached the bazaar of the military cantonment of Secunderabad, and subsequently extended to the city of Hyderabad, where it caused a mortality of nearly 5,000 persons. In the Secunderabad bazaars, more than 500 persons died, but cholera did not extend either to the European or native troops of the station for several months after it had been epidemic amongst the civil community. Two companies of Madras Sappers, coming into the station while cholera prevailed in the bazaar, took the disease, and a European regiment marching out of the station had a few cases while marching, but the stational statistics of the resident troops might be consulted in vain as indices of the very general diffusion of cholera throughout the locality in which the troops were quartered. These few instances, and they might be multiplied *ad infinitum* from the yearly medical records of this Presidency, are sufficient to show that instead of accepting Dr. Bryden's statistics without question, there are very grave reasons why they should not be received at all as indices of the general diffusion of cholera in epidemic seasons. There is nothing, in fact, but a general registration of causes of death among the native community, that will enable us to generalise, with absolute authority, as to the progress of cholera throughout the country.

Dr. Bryden has further been led into fallacies with regard to his deductions concerning the influence of race in the liability to attack from cholera. At page 222—224, he gives a table showing the relative proportion of attacks and deaths amongst the European and Native troops of the Bengal Army, and from this it would appear that the European soldier in Bengal is ten times as liable to attack, and thirteen times as liable to death from cholera, as the native soldier. This, accepting Dr. Bryden's figures as correct, may be true of the troops in Bengal, but

it certainly is not true of the army subjected to the Presidency of Madras; and the "grand deduction," "with the weight of a law and not a mere fact," falls therefore to the ground. The great liability of the European soldier to suffer from cholera in upper India must be accepted as a fact, but a fact open to enquiry in regard to its explanation. The circumstances under which the European soldier lives; his large barrack-rooms, saturated by animal exhalations from many pairs of lungs, must be considered in connection with the solitary, though limited breathing space of the native sepoy's hut. The system by which the food and drink of the British soldier is purveyed to him, and the cooking of such food in messes, and the supply of water to the barracks, must be compared with the solitary habits of the sepoy in all that relates to his eating and drinking. The general latrine of European barracks must be compared with the suburban and open-air places of resort of the sepoy. When sepoys are massed together for any time, as in marching, or in boats, Dr. Bryden is forced to admit that they have no immunity from cholera; and indeed common observation of the fatality of cholera outbreaks amongst native communities forbids the supposition that the European race is specially liable to be attacked by cholera. The cholera mortality of British troops in India is, we have no hesitation in saying, in a measure due to the peculiar circumstances of their lives in India, and not to any subtle race distinction. The fact that persons living in large barrack rooms, and eating and drinking in common, and using latrines in common, are peculiarly liable to suffer from cholera, surely points to the conclusion that the special liability must be looked for in the habits and customs of the class so affected, rather than in a difference of race.

The year 1866 was one of very general distribution of cholera throughout the Madras Presidency. Out of a total of 586,228 deaths in the civil population, 197,955 were due to cholera, giving a proportion of cholera mortality of rather more than 35 per cent. of the whole. In the same period the European army, distributed in various stations, strength 11,179, lost by death 227 men, and of these 28 were due to cholera. The proportion of cholera mortality in the European army was a little more than twelve per cent. of the whole. In the same year, the native army, strength 27,215, lost by death 342 men, 95 of whom died of cholera. The cholera mortality of native troops was rather more than 27 per

cent. of the whole. Surely this does not look much like "a grand deduction having the force of a law," that the European, on account of his race peculiarities, is specially liable to cholera. We have taken the year 1866 for comparison, because in that year cholera was not a merely local disease confined to one or two isolated districts, but an epidemic of great intensity, spreading over the whole of Southern India. If there had been any general law rendering the European race specially liable to cholera, this was the year of all others in which we might have looked for evidence in support of the law; but what are the facts?

The cholera mortality of the civil population throughout the country was	... 35	per cent. of the whole deaths.
Of the Native army	... 27	,, ,,
Of the British troops	... 12	,, ,,

Mr. Balfour, in his useful compilation of cholera statistics, has given tables (Appendix D) showing the cholera admissions and deaths amongst the European and Native troops of the Madras Army for a period of twenty-four years, ending 1868, and from these tables the following proportions are deducible.

	Aggregate strength.	Admissions to strength.	Deaths to strength.
European troops ...	265,979	... 8·6 per mille.	... 4·3 per mille.
Native do. ...	1,112,382	... 10·2 ,,	... 4·3 ,,

Here it will be seen that in South India the native soldier has been attacked in greater proportion to strength, than the European soldier, while deaths to strength have been exactly equal in both arms of the service. If there had been any race susceptibility, the evidence of it should be forthcoming in the statistics of the Madras army, as well as of the Bengal army; but the evidence, so far as it goes, is all the other way. The Madras sepoy is a different being, as regards his habits and customs, to the native soldier of Bengal. The one lives with his family in overcrowded huts, and drags his people about with him whenever he moves; the other lives alone, and is never accompanied by his family in moving. The condition of the Madras sepoy, in fact, as regards aggregation and living in common, approaches in some degree the condition of the European soldier. In marching, his liability to cholera on account of huddling so many of his people together in a dirty bandy, is more marked than that of the British soldier.

But examining the cholera mortality of prisoners in jails, where the conditions under which natives live assimilate most closely with the conditions of European troops in barracks, we find the facts leading us still further away from the "law" of a race distinction predisposing to cholera. In jails, where natives of India eat, drink, and sleep in common, and use common latrines, they have no immunity from cholera in the degree which Dr. Bryden seems to explain as a race difference. Thus in Agra, for a period of 29 years, the cholera admissions and mortality of European troops averaged 27·1 and 12·7 per mille respectively: the prisoners in the Agra central jail, for a period of 10 years, were attacked and died of cholera in the proportions of 71·1 and 34·7 per mille respectively.

In the Bombay Presidency again, the jail returns show a greater proportionate cholera mortality than the statistics of Europeans troops do; thus,

1840-1868 European troops, Cholera deaths 7·3 per mille.
" " Prisoners in jail, " 8·4 " "
" " Native troops, " 2·2 " "

In the Western Presidency, it will be observed that the native soldier suffers much less than the European soldier and the prisoner, and from this fact it may be inferred that the conditions under which he lives more nearly approach the peculiar circumstances of the Bengal sepoy, than of the Madras native soldier, or of prisoners in confinement.

In the report of the Sanitary Commissioner of Bengal for 1867, it will be seen that European troops from 1859 to 1867 have not been attacked so frequently as prisoners in that Presidency for the same period. Thus the ratio of cholera attacks amongst prisoners was 30·1 per mille, European troops, 18·8 per mille. The circumstance of the Hindustani sepoy in Bengal and Bombay being attacked in less proportions than the European soldier, Madras sepoy, or jail inhabitant, must be accepted as a fact, and as a starting-point perhaps for a specially exhaustive enquiry as to the causes of the difference; but it is premature to assume that a race difference is sufficient to account for the fact, when we see that bodies of natives, brought under conditions of life similar to those of the European soldier, are, if any thing, rather more liable to be attacked by cholera than are European troops.

Dr. Bryden thinks that the most we can do for the European soldier in enabling him to resist cholera, is to diminish

his chances of attack to the ratio which expresses the liability of the Hindoostanee sepoy. This it seems to us impossible to do while we persist, in spite of all warnings to the contrary, in building huge barracks, and massing our British troops, instead of isolating them as far as possible, in smaller and separate buildings. The "palatial" barracks which have tended so much to the disarrangement of Indian finance, are positive evils in regard to the preservation of the troops from epidemic diseases. They have been built more to satisfy the demands of theorists than in accordance with the special requirements of the country. Every Indian sanitarian, who has considered the matter for one moment, would have preferred six or eight decently built cottages, to the palatial barrack which accommodates a whole company. When this subject of large or small barracks was underthe discussion of the Government of India, it was, we believe, decided in favor of big barracks, on other than sanitary grounds, though the sanitary advisers of the Government have to this day to bear the odium of having led the State into useless and wasteful expenditure on structures which do not make the men a bit more healthy than they were before. The fact is, that while the sanitary principle of allowing ample breathing space per man was adopted in reference to the new barracks, the equally important danger of massing a large number of men in one room was lost sight of.

But while the dangers attending large barracks are more or less the same in every part of India, it is no less the fact that the British troops serving in the stations of the Bengal establishment, are much more liable to suffer from epidemic visitations of cholera than the same class of men in the stations of the Bombay or Madras Presidencies. Cholera influences on European troops stationed in Southern India, have for some years past been gradually diminishing, while in regard to Northern India and Bengal generally, no such decay of power has been observed. In two years out of the twenty-four for which Mr. Balfour has constructed his diagram of cholera mortality in the Madras army, there are marked accessions in the wave line. The first, in 1852-3, was the period of the Second Burmese War when Madras troops were largely exposed to cholera influences, and the second in 1857-8, when a number of our European troops took the field in the Bengal Presidency and suffered severely from cholera. But for the service of Madras troops, in these years, within the influence of the cholera wave from the

endemic area of Bengal, it seems clear that the cholera mortality of the Madras European army would be represented generally by a diminishing line from 1845 to the present date.

While, however, the diminution in cholera mortality of the Madras army of recent years is an undisputed fact, (the evidence of which would be much clearer still but for the inclusion of the casualties of the stations of Nagpore and British Burmah in the Madras Presidency returns), it is by no means certain that any favorable change has come over the native population to render them less liable to cholera. The last general epidemic year of 1866 was as severe upon the native population as it could well be, yet the European troops suffered in no inordinate degree. The curve in the diagram for that particular year is not upwards, but downwards. It is certain therefore, that while cholera is as widely prevalent, and as fatal as ever to the native population, our European troops in the stations which properly belong to this Presidency, are in some degree protected from the influences which affect the native population. Dr. Bryden's figures all go to prove the opposite condition in Bengal, and he appears to have deduced from them a general law applicable to the European race in India, which law we have shown has no existence in the south of the Indian Peninsula, whatever may be the case elsewhere.

We have already alluded to Dr. Bryden's theories of the aerial transmission of cholera, and pointed out the weakness of the evidence in support thereof. As the wind theory is not sufficient of itself to account for all the phenomena of cholera invasion, such as the advance as it were by leaps, and the non-infection of localities freely exposed to monsoon winds, we have another purely conjectural hypothesis brought in to assist the aerial transmission doctrine in places where it is weak and in danger of breaking down. This is the theory of "precipitation," which Dr. Bryden shall explain for himself.

"I believe it to be true, that when any circumstance "checks epidemic advance short of the natural limits, the "whole material is precipitated, and the result is enormous "strength locally manifested, either at the time, or in the "revitalization. On many occasions the natural limits of "a province will act as an opposing barrier. If the pro-"pelling power from behind be strong, and the resistance by "the opposing influences be sufficient to prevent overstep-

"ping of the natural limits, compression and concentration "is the result. Hence is occasioned the frequent severity "of the cholera invading from the east of the Cawnpore "district, of Shahjehanpore, and of Western and Northern "Oude: it is driven towards the natural barrier by eastern "influences, and when it can get no further, it becomes loca- "lized in force along the line of the natural limit, and here it "is often found much more severe than in the countries over "which it has merely passed. So also is the case with the "great invading western cholera. This seems to be the "reason why Mean Meer has been so constantly and so dread- "fully visited. It is the last station reached from the south- "east by invading cholera. It is as it were under the "wall against which the advancing cholera strikes and ter- "minates; it is in the space within which compression and "precipitation occurs, because the vehicle fails, and further "advance is prohibited on all occasions of invasion with the "monsoon. I regard the Himalayas as a barrier so situated "that the renewal of cholera in strength after invasion "along the base, is certain to take place at the proper season, "independent of the physical aspects of the country, which "are also calculated to foster the miasm."

Now here is a very pretty theory to account for the intensity of cholera at Mean Meer. But unfortunately it does not explain why the large native city of Lahore, or the civil cantonment of Anarkullee should escape, while the military cantonment alone should suffer so terribly. Admitting Dr. Bryden's theory of compression and precipitation, as due to the geographical position of Mean Meer, the same causes must be operative over the native city of Lahore, and the civil cantonment, which occupy precisely similar positions in reference to the wall of hills behind, which, according to Dr. Bryden, stops the advance of cholera. But what are the facts in reference to the neighbouring cities? Let the historians of the cholera epidemic of 1861 answer this question.*

"Nowhere did the pestilence fall upon our European soldiers with such terrible violence as at Mean Meer, the military cantonment of Lahore. Out of a force comprising 2452 men, women and children, 880 were attacked with cholera, and 535 died in the space of little more than one month. In the records of destructive epidemics, there can hardly be found a more lamentable history than this. It adds not a little to the horror of the story to know that cholera hardly existed outside the cantonments of the troops,

* Report of Commissioners on Cholera in Northern India in 1861.

and that while our soldiers were dying by hundreds, *the city close by, with its* 90,000 *people, remained almost entirely free from the disease.*"

Again "in Anarkullee only one case occurred in the European population, and *this was in a woman who had acted as nurse to a lady and her child, both of whom died of the disease in Mean Meer.*"

The Central Jail of Lahore, under charge of Dr. Dallas, and at the time containing about 2,000 prisoners, was subjected to the most complete system of precautionary measures. Only one prisoner was attacked with cholera. If a general precipitation or concentration of the *materies morbi* had occurred at the base of the hills in 1861, how was it that the town of Lahore and the jail escaped as they did? Dr. Bryden's theory of race difference as regards liability to attack will not help him here, for, as we have already seen, the large civil European community of Anarkullee had no cholera at all, except the solitary case of a woman who had contracted the disease at Mean Meer. There can be no reasonable doubt, we think, that the cholera at Mean Meer in 1861 was intensified by bad sanitary conditions, and by the concentration and multiplication of the poison in the barracks and hospitals of the station.

The "precipitation" theory, in its geographical aspect, breaks down completely when we come to test it, as Dr. Bryden does, by reference to the case of Mean Meer. But in its other aspects, it seems to us that Dr. Bryden is travelling far beyond the record when he speaks with such certainty of the precipitation of cholera. Admitting that cholera is an emanation from the soil, and that the monsoon winds carry it with them in their course, why should the mere resistance which wind currents meet with from hills, cause a compression and concentration of the cholera miasm? Has Dr. Bryden any grounds for concluding that air blown against a hill side is compressed by the operation, and if the air be not compressed, why should an impalpable constituent of the air suffer compression and concentration? The fact is, the theory of aerial transmission of cholera demands the acceptance of all the subordinate theories of "precipitation," "dormancy," and "revitalization." Dr. Bryden having so unreservedly committed himself to the one, is forced of necessity to assume the possibility of the others. He finds fault with those who hold on to the doctrine that cholera is a communicable disease, and that its manifestations are always connected with man, because this doctrine, con-

fessedly, does not serve to explain all the phenomena of an epidemic; but while advancing his own peculiar views, he appears to forget that he is wandering completely out of the field of ascertained facts, and that so far as proof is concerned, his special theories have not in the least been advanced by the voluminous statistics he has given to the world.

There are some passages in Dr. Bryden's report which would lead us to doubt whether his mind is of that peculiar balance suited to deal impartially with facts, and whether the tendency to theorise does not unconsciously lead him to miss the true relation of his facts one with another. As an illustration, we may take a remark he makes at page 68, on the influence of dryness of climate on the type of dysentery.

"I know no fact more strikingly illustrative of the effects of "the absence of monsoon influences in the famine tract in "1860, than this, that not one European soldier out of a "force of 2,300 died of dysentery or diarrhœa in this year "at Meerut. The Regimental Medical Officers attributed "this to the more extensive employment of ipecacuanha in "the treatment of dysentery: to me it appears chiefly as a "climatic phenomenon, a modification of type, in relation to "the absence of influences which are powerful to produce "such diseases."

The intelligent use of ipecacuanha in the cure of dysentery is here wholly ignored in the support of a far-fetched theory regarding change of climate, and yet, if Dr. Bryden had cared to examine into the history of dysentery about this time, he would have found a very marked decrease in mortality, not only in the stations where no rain fell, but in all kinds of climates. In the Madras Presidency for instance, where cholera was unusually prevalent and fatal in 1860, the mortality of British troops from dysentery fell, from an average of 7 per 100 treated, to less than two per cent. This result had nothing whatever to do with climate, but was simply caused by change of treatment. The facts in regard to the diminution of mortality from dysentery, not only in Madras but in Bengal and other parts of India, were available to Dr. Bryden, if he had cared for examining both sides of the question, rather than contenting himself with a one-sided view that would help to support a very dubious theory. It is of this tendency to ignore everything that does not quite fit in with the author's own views

that we have to complain—a tendency which detracts immensly from the value of Dr. Bryden's labours.

We have yet another point to notice in the way of fault-finding. Dr. Bryden gives a table of 104 outbreaks of cholera in European troops, from which table the reader would conclude that the stress of the disease is always witnessed on the first day of the outbreak, and that the declension goes on with occasional accessions, from that time. He arrives at these particulars by studiously declining to take account of the isolated and dropping cases, which we believe invariably precede, and are a part of, the regular outbreak.

He observes (page 176) "what are apt to be taken for the "cases introducing the outbreak are the sporadic cases which "are constantly liable to occur in every community, when, "for example, a large cantonment is affected in the course "of an invasion. These are not necessarily a part and parcel "of the outbreak which follows, although they are an indi-"cation that the choleraic atmosphere is present. To "distinguish between these cases, and the commencement of "an actual outbreak, is of great importance when movement "into camp is contemplated, but I know of no method of "making the distinction."

We may remark of this, that as such cases cannot be separated from the outbreak, it is rather a pity that Dr. Bryden should have garbled the figures of the 104 outbreaks he tabulates at page 195, by their omission, thus giving a false impression to the cholera student of the true facies of a local outbreak. To those who hold by the doctrine of the communicability of cholera, the early segregation of the so-called sporadic cases, and the careful disinfection of everything in contact with them, are points not to be overlooked. Dr. Bryden not only refuses to tabulate such cases as part and parcel of an outbreak, but he declares that the outbreak is quite independent of them. Although Dr. Bryden is at perfect liberty to hold these, and any other views he pleases, we question the propriety of his including them in a report published "by authority." When the Commander-in-Chief desired Dr. Bryden to compile the statistics of cholera, as illustrating the effects of removal into camp of British troops during cholera outbreaks, it seems to us that his Excellency did not desire to have a great mass of pure theory heaped on his head, or statistical data drawn up in a form to support mere theory. There could have been no objection whatever to Dr. Bryden airing his theories to his heart's content as an

independent author; but an official report, it seems to us, was not the fittest place for the inclusion of what must be considered matter altogether beside the question submitted to him.

The Inspector General of the Indian Medical Department, Bengal, and the Sanitary Commissioner, it is well known, do not subscribe to Dr. Bryden's theories, and it is not a little curious to note the mode in which the conflicting views of the various authorities are dealt with. The Government of India publishes an annual report of the Sanitary Commissioner, showing how the Hurdwar pilgrims distributed cholera in 1867. It undertakes also the printing of Dr. Bryden's report, which tries hard to establish that the pilgrims had nothing to do with the cholera in question, and that he, Dr. Bryden, had prophesied its arrival on independent grounds. In the same way, Dr. John Murray, the Inspector General of Bengal, submits a report to Government, in which he shows that 456 members of the Medical profession in India, against 25, agree with him in the opinion that cholera is a communicable disease, and that it should be regarded as such in all public administrations. Of the 25 objections to this view, only five distinctly negatived the proposition, and 20 gave "uncertain" replies. By the official publication of Dr. Bryden's hypotheses, the Government of India, in the most catholic spirit, has given the same publicity to the views of the minority. We question, however, whether the advance of knowledge is to be served by the indiscriminate publication of views which are to say the least crude and unwarranted in the present stage of the enquiry.

Dr. Bryden, we trust, will at a future date recast his work, so that it may have attractions for the general professional reader, which it certainly does not possess in its present shape. As a contribution to the study of cholera in the epidemic field of Bengal, it will always have a value of its own, irrespective of the theories peculiar to the writer. While we have felt it our duty to canvass these theories, we are by no means insensible to the zeal and earnestness which Dr. Bryden has thrown into his work, and when his own mind is a little clearer in regard to his theories, we trust to hear that his literary labours may bring forth good fruit.

(To be continued.)

MEDICAL MISCELLANY.

Remarks of the Inspector-General I. M. D. on the Report of the Committee on Mofussil Medical Schools.

To the Chief Secretary to Government, Fort Saint George, dated Fort Saint George, 19th January 1870, No. 17.

I have the honour to forward, herewith, for the consideration of Government, the Report of the Committee appointed in Government Proceedings, No. 1059, of 30th July 1869, and beg to append my own observations thereon.

2. In consideration of the magnitude of the *work* to be done, I am of opinion that the scheme of educating native medical practitioners should not be limited, even experimentally, to one district, as is proposed by the Committee in paragraphs 5 and 6. I have already suggested, and the Board of Revenue in their Proceedings, No. 2831, of 27th April 1869, have concurred in the view, that it would be most desirable to establish at the least two of these Medical Schools in the Telugu Districts, two in the Tamil, and one in a Malayalum District. As each Medical School would probably turn out no more than eight or ten qualified practitioners yearly, and taking into account the fact that, if we allow the moderate computation of one village doctor to 3,000 of population, a total of 8,500 practitioners would ultimately find employment in this Presidency alone, it is evident that, even with the larger number of experimental schools I propose, many years must elapse before the supply of qualified native doctors can be such as to sensibly benefit the mass of the population. I approve so far the Committee's recommendation that the district of Cuddapah should be one of those in which a school might with advantage be established, there being a good Civil Hospital and a well-qualified Superintendent ready at hand for the duty ; but I trust, also, that sanction may be accorded to the establishment of schools at Vizagapatam, Trichinopoly, Madura, and Cochin or Calicut on the Western Coast. The Board of Revenue has suggested Cannanore as the most suitable station in the Malayalum Districts, but the absence of any Civil Hospital or Dispensary at that station is a serious drawback, whereas the hospitals at Cochin and Calicut are well-adapted for clinical teaching.

3. The Committee in paragraph 10 have laid down a course of study which it is recommended should extend over a period of three

years. The programme is unobjectionable, but it may be a subject for grave consideration, whether the insistance upon a course of three years of preparatory and unremunerative work is not, in the first instance, likely to defeat the object which Government has in view. My own impression is that, looking to the fact that no very tempting prospects are held out to young men to induce them to study for the medical profession, the period of study should not at present extend beyond two years. Hereafter it may be practicable to lengthen the time of preparatory study, but in the beginning of a great and interesting experiment of this nature, I doubt if it would be politic to discourage young candidates for the profession by requiring an educational course, which may be regarded as incommensurate with the prospects in after life. As to the subjects which should be taught I agree generally with the Committee, but I would not advise that any attempt should be made at the onset to teach the elements of midwifery. The services of such men would never be sought for in ordinary midwifery, and in difficult cases "a little knowledge" might cause more harm than good.

4. In paragraph 12 the Committee suggest that the title of "Village dresser" might be fitly applied to men trained in the rudiments of their profession in the manner above described, but it appears to me that the title is scarcely suggestive enough of the profession. I should prefer the term "Vythian," or its English equivalent.

5. The compilation of suitable vernacular text books is a very important part of educational scheme, and the Committee have this question in paragraph 13 of their report. I may remark that the services of Mr. Danekotta Raju, a graduate in medicine of the Madras University, would be available for the compilation of the necessary text books. This gentleman has already prepared a Manual of Hygiene in Tamil, in a form which would be suitable for students of the Provincial Medical Schools, and I believe him to be very well qualified to assist in the medical education of his fellow-countrymen, in which work he might afford material aid by the compilation of standard text books suited to the comprehension of the pupils.

6. The rates of stipend proposed by the Committee in paragraphs 15 and 16 appear to be moderate. I have nothing to suggest further on this head except that I would not bind any man, who had passed a standard examination and proved his qualification for practice, in a penalty to give service to the State. It will, doubtless, be desirable to offer these trained native practitioners employment in connexion with the medical and sanitary administration of the country at any rate, until the chief station of each taluq has been supplied with a medical man ; but it is sufficiently obvious that, if an effort is to be made to educate the classes who

now practise as hakeems and Vythians, many will prefer to pursue their profession among their own connexions, rather than take up Government employ, and it seems to me undesirable to place any restriction on the way in which men shall follow their profession. I would suggest that no one should be passed as qualified under the age of 21, but would have no other restriction in regard to age.

7. It is hardly necessary to discuss the question of the establishment of village dispensaries as suggested by the Committee in paragraphs 16 and 19. Such institutions, if they are ever to spring up at all, must be supported in some shape by the people. All that the Government can reasonably be expected to do in this matter, I conceive, is to make provision for medical aid being given to the poor and helpless, and to enforce a standard minimum of qualification of all those who aspire to serve the State as medical men or as sanitary officers. The first object might be attained, supposing the men to be available, by apportioning a medical officer to a certain district, as is done in Great Britain and Ireland under the direction of the Poor Law Board. The second it is within the power of the State to define by legislative enactment, when the time shall have arrived to enforce it. The extension to remote outlying villages of the dispensary system would, I conceive, be a measure of questionable utility, though, as regards the chief taluq towns and other centres of population, such institutions for out-door relief would be very desirable.

8. In paragraph 18 the Committee deprecate the limitation of the proposed training to the sons of the present generation of practitioners. I would remark on this head that, other things being equal, the sons of the indigenous practitioners should have the first consideration. It would be a great mistake to admit as pupils men who, from their social position, would be unable to mix freely with caste people; and, although the candidates need not be strictly limited to relatives of Vythians, it would be well to remember that the calling of a Vythian *does* already exist, and that the people as a rule repose confidence in the advice and treatment of the indigenous physician. Probably the most hopeful means of improving the degraded position of the medical profession in India might be found in raising the professional status of the existing class of native physicians. Any action of Government which might induce the present generation of hakeems and Vythians to view the proposed educational scheme in a light as opposed to their own interests would, I think, very much interfere with its successful working, and on this ground I think it right to remark that special inducements should be held out to the sons of Vythians to avail themselves of the proposed course of study. They should certainly have the first claim to the benefits of the proposed measures.

9. In paragraph 20 the Committee discuss the question of the means of supply of indigenous drugs to village dispensaries. I

have already remarked that the question of educating native practitioners need not be complicated at the present time, with a discussion of the more doubtful advantages of village dispensaries. Whether these are needed, or not, to the extent advocated by the Committee, it is somewhat premature perhaps to offer an opinion. At all events, whether they be needed or not, I am wholly opposed to the interference of Government with the question of the supply and storing in depots of indigenous drugs for general use throughout the country. We have only lately adopted a standard Pharmacopœia for India, and officially authorized the substitution of certain imported drugs by those obtainable in the country. In process of time, should there be a demand for these and other drugs in districts where they do not naturally occur, private enterprise is sure to step in to meet the want.

The establishment of Government depots for the reception and distribution of such drugs, as advocated by the Committee, would, in my opinion, tend to paralyze all private enterprise in this direction, and could only be maintained at a cost out of all proportion to the advantages. India already consumes locally and exports many medicinal drugs of great value, such as opium, borax, senna, cardamoms, nitre, &c. In a very short time chinchona barks and their alkaloids will be added to the list. It cannot be doubted that, if a demand springs up locally, or elsewhere, for the common indigenous medicines lately admitted into the Indian Pharmacopœia, people will find it worth their while to store and supply the same wherever they may be wanted. Supposing that the number of 8,500 village dressers was ever arrived at, it is obvious that no one central department of administration could undertake the task of storing and distributing supplies to them. My own view in regard to this matter is that the salary of the village Vythian, or whatever he may be called, should be fixed so as to include remuneration for supplying medicines and medical attendance on the poor, as is the practice in Great Britain under the Poor Law Board. It would, I think, be wholly impossible in any other way for the Government to attempt to afford medical aid to the people at large.

10. As regards the admission into Government employ of young men trained in the various schools of the Medical Missions, as recommended in paragraph 23, I see no serious objection so long as the men are of a social status which would not interfere with their usefulness. But it seems to me that the question of fixing upon a standard of qualification for native practitioners to be applied after a given date, is one that will have to be dealt with by Government in its legislative capacity. All persons of this description should ultimately be required to conform to a prescribed method of study and pass a qualifying examination conducted by legally constituted authorities before receiving licenses to practice, or before obtaining

employment in connexion with the medical and sanitary administration of the Government.

11. I concur generally in the views expressed in paragraph 24 of the report, though, until the complete establishment of the five provincial schools alluded to, I would recommend that no attempt should be made in the training of village midwives. There are many difficulties to be overcome, and I am impressed with the belief that the suceessful launching of our provincial Medical Schools will for a time tax the best energies of the gentlemen whom Government may be pleased to entrust with the conduct of so important an experiment.

12. In conclusion, I have much pleasure in commending to the favourable notice of Government the report of the Committee, and in expressing my satisfaction at the thoughtful consideration which the members have brought to bear on the question before them.

MEDICAL INTELLIGENCE.

(General Orders by the Governor in Council.)

Furlough Rules of 1868—Extension of Leave.

G. O. G. No. 174 of 18th May 1869.—The following extract correspondence received from the Government of India is published—

Copy of letter dated 17th February 1869, *from Lieutenant* * * * * *to the Brigadier General Commanding Punjab Frontier Force.*

I have the honor to request the favour of your forwarding this my application for an extension of preparatory leave from the 15th February to the 4th March 1869, as I was unable to procure a passage in any steamer sailing previous to the 4th March. Should this be granted, it will enable me to count my furlough from the 4th March instead of the 15th February.

From Colonel H. W. Norman, C. B., Secretary to the Government of India Military Department, to the Military Secretary to the Government of Punjaub.—(No. 161, dated Simla, 21st April 1869.)

In reply to your communication No. $\frac{151}{835}$ dated 13th April 1869, I am directed to acquaint you, that the Right Hon'ble the Governor General in Council is pleased, as a special case, to sanction the extension of leave to Lieuteuant * * * therein asked for.

2. With reference to the point raised in your commnnication under reply, I am directed to acquaint you, for the information of the Hon'ble the Lieutenant-Governor, that, under Clause XVIII of the Furlough Rules of 1868, whoever has power to grant the preparatory leave under that clause, has equally authority, on due cause being shown, to grant the necessary extension.

3. I am, however, to point out that the power should be exercised only on very sufficient reason being adduced for the indulgence. For example, in such cases as the one which has caused this reference, it should be shown that the officer has taken all reasonable precaution to secure his passage. Indeed, as officers are prohibited from leaving their stations until their furlough has been granted, they should, in the same way, not leave them, unless there is reasonable ground for believing they can embark within the period of ordinary preparatory leave.

Officers—Leave—Departure from Stations.

G. O. G. No. 175 of 18th May 1869.—The following extract from the Proceedings of the Government of India, in the Military Department, No. 176, dated Simla, the 22nd April 1869, is published :—

Officers are on no account to be permitted to leave their stations until they have been officially informed that the furlough has been sanctioned.

RESOLUTION.—It having been brought to the notice of the Right Hon'ble the Governor General in Council in the Military Department, that in many cases the provisions of Clause 3 of Government General Order No. 34 of 1869, have been overlooked, His Excellency in Council is pleased to direct that the very special attention of all military officers be called to the order in question, and that they may be informed that if they disregard it, any inconvenience they may suffer will be due entirely to their own disobedience of positive orders, and will form no ground for any claim for consideration by the Government of India.

British Officers on Medical Certificates—Indian Allowances.

It is hereby announced that Her Majesty's Government having been asked whether the admission or denial of Indian allowances for the first six months to Officers of her Majesty's British service who quit India on medical certificate, should depend on the date of arrival in that country of those Officers, or whether the rule in paragraph 3 of War Office Circular No. 901, dated 9th February 1865, published in G. O. No. 471* of 11th May 1865, was to be held as restricting it to the date of departure from England of the Regiment, Battalion, Brigade or Battery to which such Officer belongs, Her Majesty's Secretary of State of India has ruled that the discontinuance of the grant is to apply only to Officers of Her Majesty's British service belonging to Regiments, Battalions, Brigades and Batteries which shall proceed to India subsequently to the date of the New Passage Warrant.—(G. O. G. G. No. 509 of 1869.)

* Madras G. O. G. 2nd June 2865, No. 109.

Medical Officers in Civil Employ—Acting Allowances.

G. O. G. No. 178 of 18th May 1869.—The following extracts from Notifications in the *Gazette of India* are republished :—

No. 13.—The following letter to the address of the Secretary to the Government of Bengal is published for general information :—

"I am directed to acknowledge the receipt of Mr. Officiating Junior Secretary A. Mackenzie's letter No. 691 of the 22nd February 1869, regarding the allowances of Commissioned Medical Officers of the Army officiating in civil appointments.

"2. In reply, I am desired to state that orders will be issued hereafter regarding the allowances of Medical Officers officiating in any of the Civil appointments, the salaries of which were fixed in the General Order of the Government of India in the Military Department, No. 370,* dated the 4th April 1867, but that the allowances of a Medical Officer acting in any other civil appointment must be regulated by the rules for the grant of acting allowances to Military Officers in civil employ."

* Madras G. O. G. 20th April 1867, No. 171.

Civil and Military Officers in Civil Employ—Furlough on Expiry of Privilege Leave.

Read extract from the Proceedings of the Government of India, in the Foreign Department, No. 452, dated the 8th ultimo, sanctioning an application from Mr. J. D. Gordon, Judicial Commissioner of Mysore on privilege leave, for permission to proceed to Europe on furlough for two years on the expiration of his privilege leave without rejoining his appointment.

Resolution.—The Governor General in Council observes that there are two theories of privilege leave :—

First.—That which has always been maintained by the Secretary of State and the Government of India, *viz.*, that this leave is granted for the purpose of enabling an officer who has worked uninterruptedly for a certain period to recruit his health and strength for future work ; and

Secondly.—That which has gained ground among the Officers of the Service, *viz.*, that this leave is a privilege earned by past work, and has no reference to the future. On the first theory has been founded the rule which has always been insisted upon, that at the

conclusion of privilege leave an Officer must rejoin his appointment. On the second theory, every attempt has been made to evade the above rule. Privilege leave has been unhesitatingly granted to Officers, although it was known that at the conclusion of that leave they did not intend to do any more work for some time, but were about to proceed on leave of another kind. The formality of rejoining the appointment has been observed in letter, but the spirit of the rule has been broken by the nominal transfer of the Officer concerned to a similar post in or near a Presidency Town, whence he could embark on longer leave.

Covenanted and Military Officers in Civil Employ—Travelling on Transfer.

The following letter to the Accountant General, Madras, is published for general information :—

I am directed to acknowledge the receipt of you letter No. 6813 of the 17th ultimo, enquiring whether the seven days in addition to travelling, allowed by the Order of this Department, No. 1313, dated the 16th March 1865, to a Covenanted Civil Servant or a Military Officer in civil employ, transferred from one station to another, should be spent by the transferred Officer at his old or his new station, and in reply to state that it is unnecessary to prescribe a rule on the subject.—(G. O. G. G. No. 280 of 1869.)

Furlough—Warrant Officers holding Honorary Commissions.

G. O. G. No. 185 of 25th May 1869.—The Government of India have ruled that in all cases of Warrant Officers holding Honorary Commissions, service for furlough may count from the date of first Commission of any description.

Hospital Apprentices—Ration Money.

G. O. G. No. 197 of 1st June 1869.—The Government of India have ruled that so long as Hospital Apprentices continue in receipt of pay as such, and are not promoted to a Warrant Grade, they should be considered entitled to ration money.

Officer's Horse Allowances—Leave—Pay.

G. O. G. No. 198 of 1st June 1869.—The following extract from a Military Despatch from the Home Government to the Government of India, is published :—

Despatch dated 31st March 1869, No. 92.

Para. 20. I approve of your decision, that Officers proceeding on short furlough on private affairs shall be allowed to draw horse allowance for a period not exceeding six months, provided they *bona fide* keep up their chargers during their absence ; and that Officers of Horse Artillery returning from furlough either on medical certificate or on private affairs, shall receive Horse Artillery rate of pay from date of arrival, when they come on Indian allowances, and if their chargers have been maintained by them and are available, horse allowance also.

Furlough under 1868 Rules—Pay and Retention of Appointment—Furlough Allowances

G. O. G. No. 206 of 1869.—The following extract from General Orders by the Government of India are republished :—

The following paragraphs of a Military letter from the Right Hon'ble the Secretary of State for India, No. 104, dated 15th April 1869, are published for general information :—

Para. 1. Your communications and Resolution noted in the margin, record your having decided as follows on questions relating to the Furlough Rules of 1868—

Military Letter No. 46, dated 2nd February 1869.
,, ,, ,, 469 ,, 4th December 1868, para. 7.
Resolution ,, 489 ,, 21st January 1869.

That,

If an Officer, while on furlough, be transferred to another appointment, he will still continue to draw the furlough pay as before, whatever the salary of the new appointment may be, but the Officer acting in the latter will be restricted to half staff salary.

If, during his absence on furlough, an Officer's appointment be abolished, he will forfeit his claim to half staff salary, and will revert to the furlough pay of his Military rank, regard being had to any circumstances deserving special consideration.

That,

The following will *not* form part of the aggregate of eight years' furlough, with pay and retention of appointment, to which an Officer who may elect the Furlough Rules of 1868 is restricted by Rule XVI :—

I.—All leave taken as local leave (not being furlough) in India ;

II.—All leave necessitated by wounds received in action, or by sickness contracted on field service, which may be allowed to reckon as service for pension under the provisions of G. O. G. No. 1113 of 1857.

III.—All leave duly granted to England on extensions of furlough, or leave on medical certificate granted in England *if without* pay ;

IV.—All sick leave to England that may have been taken under the Rules of 1796 on the old rates of furlough pay ;

V.—All sick leave granted to the Colonies eastward of the Cape of Good Hope under the Rules of 1796.

But the following will form part of the eight years referred :—

I.—Furlough with pay on private affairs under whatever Rules it may have been taken ;

II.—Leave to England on medical certificate with pay under the Furlough Rules of 1854.

That,

If the twelve months' leave in India on medical certificate taken under Clause XXVI be exceeded, the whole leave must be reckoned as furlough, and allowances be adjusted accordingly.

That,

In the case of Military Officers in Civil employ, on consolidated salaries, the acting allowances which have been drawn by such Officers shall not be held to be special or extra allowances, but shall be taken into account as part of the salary on the average of which their furlough allowances are calculated under Rule V.

2. The sedecisions are approved.—(G.O.G.G. No. 559 of 1862).

Medical Store Supplies.

G. O. G. No. 215 of 1869.—The Right Honorable the Governor in Council is pleased to direct that the undermentioned Articles be added to the List of Medical Store Supplies :—

Cradles, leg, surgical iron, 16 inches long ; 16 inches broad, and 16 inches high.

Cradles, body, surgical iron, 20 inches long, 20 inches broad, and 16 inches high.

The following allotment is sanctioned for British Troops.—

	Leg Cradle.	Body Cradle
For a Brigade, Royal Artillery and Regiment of Infantry	2	1
Regiment of Cavalry	2	1
Detached Battery Royal Artillery, a Wing of a Corps and Detachment 300 strong ...	1	1
Detachment 200 strong	1	0
Detachment 100 strong	1	0

Canteen—Sanitary—Cholera.

No. 269.

The Commander-in-Chief is pleased to direct the cancellation of that portion of para. 1 of G. O. C. C. dated 21st June 1864(*) page 130 of Standing Orders, permitting the issue of two drams of rum during the prevalence of epidemics, or in special individual cases when deemed advisable by the Medical and Commanding Officers.

* Madras G. O. C. C. No. 70, 16th August 1864, page 495.

Public Officers in British Burmah—Leave on Medical Certificate.

No. 2468, GOVERNMENT OF INDIA, FINANCIAL DEPARTMENT.

LEAVE AND ALLOWANCES.

Fort William, 17*th November* 1869.

NOTIFICATION.—A case having been recently reported to this Department, in which a public Officer in British Burmah before applying for leave on medical certificate proceeded to Madras to have the certificate countersigned by a Medical Board, the Governor in Council is pleased to notify, for general information, that when a public Officer in any Department in British Burmah applies for leave on medical certificate, the certificate, countersigned by a Medical Board of which the members will be the Deputy Inspector General of Hospitals in that province, and the two next senior Medical Officers at Rangoon, will be sufficient authority for granting the leave permissi-

ble under the leave rules, and need not be countersigned by any higher medical authority.

2. The leave may be granted by the Chief Commissioner of British Burmah, and reported for confirmation to the Government of India.

Appointments—55 years' Rule.

Financial Department, Pensions and Gratuities, 17th December 1869.

No. 3035.—Read the following :—

Extract from a Notification of the Government of India, in the Home Department, No. 794, dated the 25th January 1865, and published in the "Gazette of India" of the 28th idem :—"The Governor General in Council is pleased to pass the following rule, which shall be held applicable to all Military and Naval Officers in civil employment, and to Uncovenanted Officers holding gazetted appointments, and receiving such appointments direct from Government. After the age of 55 years, no Military or Naval Officer, or Uncovenanted Servant, shall be appointed to a new office in civil employment, or shall be permitted to retain any such office which he has held for five years and upwards, except in special cases, which are to be referred for the decision of the Right Honorable the Secretary of State. This rule will be applicable to every Military and Naval Officer, and to every Uncovenanted Servant appointed to any civil office after its promulgation, and to all other Military and Naval Officers and Uncovenanted Servants employed under the civil administration at the close of five years from the date of its promulgation."

Read also—

A letter from the Accountant-General, Punjab, No. 117, dated the 17th ultimo, enquiring, with reference to the rule quoted above, "whether, in cases where salaries are personal and irrespective of the particular appointments held, the five years during which an officer 55 years old is permitted to retain his office, should not reckon from the date of his last promotion to the class to which he belongs."

Resolution.—Concurring in the opinion of the Accountant-General, Punjab, the Governor-General in Council is pleased to decide that in the cases of classified officers of the Financial Department, and all officers similarly situated, promotion to a new class shall, for the purposes of the rule quoted above, be considered equivalent to appointment to a new office.

ORDERED, that the foregoing Resolution be published in the "Gazette of India," and communicated to the other Departments of the Government of India; the Comptroller-General of Accounts, and the Accountants-General in Bengal, Madras, Bombay, the North-Western Provinces, and the Punjab.

Ordered also, that the foregoing Resolution be communicated to every Military and gazetted Uncovenanted Officer appointed by the Government of India in this Department to the Account, Currency, Postal, Mint, or Assay Department, with the request that he will submit without delay to this Department an autograph statement of the date and year of his birth.

(General Orders by the Commander-in-Chief.)

Dress—Medical Department.

Intimation having been received from the Horse Guards that the dress for British Medical Officers has been assimilated to that for Officers of Infantry of the Line, the present pattern lace and buttons being retained, the Commander-in-Chief in India desires that Staff Medical Officers of the British Service will conform to the change which has been authorised in the following particulars:—

Coat.—Tunic, as described in Horse Guards G. O. 79 of 1868.

Scabbard.—Brass of Officers having the rank of Field Officers; steel for Officers under that rank.

2. The belts as prescribed for Medical Officers of the different grades are described in Horse Guards G. O. No. 11 of 1869.

Cholera in Cantonments.

G. O. C. C. No. 143 of 22nd December 1869.—In continuation of G. O. C. C. No. 121, dated 4th September 1869, His Excellency the Commander-in-Chief directs attention to the following extract from a General Order issued by His Excellency the Commander-in-Chief in India on the 23rd June 1862, and to the subjoined letter from the Secretary to the Government of India Military Department, to the Quarter Master General in Bengal, dated 13th October 1864, No. 176, which are published for information and guidance.

Extract from General Orders by His Excellency the Commander-in-Chief, dated Head Quarters, Simla, the 23rd June 1862.

The Commander-in-Chief is pleased to publish the following rules which have received the sanction of Government.

1st.—On the occasion of an outbreak of cholera, such changes in the diet, and such other medical comforts are to be allowed to the sick, as the Deputy Inspector General of the Circle or other Principal Medical Officer may deem expedient.

2nd—Wood fire, if considered necessary, are to be maintained to the windward of camp.

3rd—The railway is to be used for the conveyance of the troops through an infected tract.

4th—In wet weather cots are to be carried for all the men to prevent their sleeping on damp ground.

5th—On the requisition of Medical authorities Commanding Officers to indent on the nearest magazine for such additional camp equipage as may be considered necessary. The indents to be countersigned by the Deputy Inspector General of the circle and the Officer commanding the station.

6th—The Deputy Inspectors General of Hospitals being the officers specially appointed by Government to judge of the extent to which the recommendations of Medical Officers should be complied with, the Commander-in-Chief desires that their opinion may, whenever practicable, be obtained. In the event of their absence from the station, the opinion of the senior Medical Officer may be acted upon.

From the Officiating Secretary to the Government of India, Military Department, to the Quarter Master General; dated Fort William, 13th October 1864, No. 176.

It having recently been represented to Government that clause 5 of General Order by the Commander-in-Chief, dated 23rd June 1862, is sometimes misunderstood as warranting the provision of camp equipage to meet a possible outbreak of cholera, I am directed to request that His Excellency the Commander-in-Chief may be moved to cause all Commanding Officers clearly to understand that in all ordinary cases when cholera appears at a station in an epidemic form, the established proportion of camp equipage will be sufficient to accommodate that portion of the garrison which it may be necessary to move into camp, as intimated in paragraph 2 of the letter to your address, No. 99, dated Simla, 16th April 1853, —and that extra camp equipage should not therefore be indented for unless the epidemic should prove severe and render it probable that a larger proportion than half of the garrison may have to be removed from cantonments.

CORRESPONDENCE.

The Johnstone Medal.

To The Editor of the Madras Medical Journal.

Sir,—Doubtless you are aware that the Johnstone Gold Medal "is given" (annually) "as a prize to the best qualified student" (leaving the Medical College) "of the Senior or Second department;" and doubtless, too, you have observed that the Medal is always adjudged to a Second Department student.

I would be very thankful to you, Sir, if you could inform me why the Medal is held out to both Departments and given only to one, the Second Department? I cannot call to recollection, neither can any one else, a year in which the Senior Department took the Medal. Why is this? If the Medal was not intended for the Senior Department, why fool the Senior Department students and the public? I would also like to know whether the assignment of the Medal to the Second Department student implies the superiority of that student to a student of the Senior Department?

To me it seems that the Medal is *only* intended for the Second Department, and that it is *nominally* held out to the Senior; and it seems so from the following considerations.

1st. The curriculum and period of study at College of the two departments are so different, that no comparison can be reasonably drawn between them.

2nd. The Senior Department student is, and must necessarily be, better qualified than a Second Department student, because—

(*a*). He spends five years in professional study, while the Second Department student only spends three.

(*b*). He studies the following subjects, which the Second Department student does not.

Botany, Comparative Anatomy, Microscope, * Medical Jurisprudence, Organic Chemistry, and a second course of Physiology.

(*c*). He walks the Surgical, Medical, Ophthalmic, and Obstetric wards for a much longer period than the Second Department student.

3rd. The Senior department student undergoes a higher and much more severe examination test of his professional knowledge at the Madras University.

The public, Sir, no doubt, are under the impression that the Medal is given by competition to the "best qualified" student of

* This subject has only been introduced this year into the curriculum of the Second Department instead of Pathology.

the Senior or Second Department, and will consider the Second department Medalist as superior to the Senior Department student, who is leaving College with him.

In my opinion it is unfair, in the first place, that Senior Department students should stand with the Second for the Medal, because the former have so many advantages, which the latter have not ; and, in the second place, still more unfair that the Medal, which is held out to both departments, should be given to the Second department without any competitive examination. I would suggest, therefore, that the Medal be held out only to the Second Department, for which, no doubt, it was originally intended, or if it be held out to both the departments, let the Medal be adjudged by competition.

MEDICUS.

TO CORRESPONDENTS.

DR. STEWART.—*We shall be happy to receive the further communication you mention.*

MR. W. E. WRIGHT.—*Received with thanks.*

N. S. ANTHONY.—*Do.*

DR. STRACHAN.—*Your request shall be attended to. Send name of publisher. We shall be glad to see the other paper if not already published.*

BOOKS, &c. RECEIVED.

Dublin Quarterly Journal, (*Nov.* 1869.)

Edinburgh Medical Journal, (*Oct.* 1869 *to March* 1870.)

New York Medical Record, (*to Nov.* 1, 1869.)

Journal Des Connaissances Médicales, (*to April* 20, 1870)

Indian Medical Gazette, (*May* 1870.)

The Secretary Madras Branch of ROYAL MEDICAL BENEVOLENT FUND SOCIETY OF IRELAND *acknowledges with thanks the following Subscription for* 1869-70.

Dr. T. Beaumont, Rs. 10.

INDEX TO VOL. I.

NOTE.—*Titles of Editorials are printed in small capitals; of Letters, in italics.*

Page.

Abscess, Hepatic, Treatment of, by Chloride of Ammonium. By W. Stewart, M.D. 439
Acetic Acid in Cholera 349
Acting Allowances—Military Officers in civil employ ... 344
———————Medical charge of British Regts. ... 167
Address to the Bengal Branch of British Medical Association. By J. Murray, M.D. ... ... *Review*... 399
Advances of Pay to Officers under Furlough Rules of 1868 164
———————Officers' Quarters 342
Allan, B.B., Diagram of rise and fall of Temperature and Pulse in a case of Snake-bite 251
Allowances, Indian, to British officers on medical certificate... 506
———————Acting, of medical officers in civil employ ... 507
Amorphous Quinine and other Alkaloids, therapeutical value of. By W. R. Cornish, Esq. 35
ANALYSIS OF WATER 486
Andrews, C. A., Esq. Medical Report on Kurnool Jail ... 281
———————Cases in Practice (Medical)... ... 387
——————————————— (Surgical) .. 459
Antimony, Therapeutic action of. By George Smith, M.D... 198
Anthony Pillay, N.S. Report on Turtle Oil 277
Applications for Furlough—No Demand Certificates—Statements of Service 252
———————Leave 259
Army Regulations 260,434
Arrival and Departure, Reports of 259
Atrophy of the Liver, Case of Yellow Acute. By A. Porter, M.D.... 448

Balfour, E., Esq. Cholera in the Deccan... 210
———————Sickness in Hyderabad Contingent and
———————Statistics of Cholera ... *Review* 399,487
Assigned Territories 157
Beddome, Major R. H. Descriptions of some new Lizards from the Madras Presidency 30

Page.

Boards, Medical 261
———— ——Leave to Europe 339
Brodrick, Henry Critchley, M. D. 59
Brockman, E. F., Esq. Case of Multilocular cystic growth of the neck removed by operation 68
———————————Treatment employed in Cholera Hospital, Vepery 193,270
Broughton, J., Esq. On Quinovin or Calcic Quinovinate ... 44
———————————Report on the Neilgherry Cinchona Plantations 319
Bryden, James, L., M. D. Epidemic Cholera in the Bengal Presidency ... ... *Review* 399,487
Building, Advances for 252
Burmah Inspections of Hospitals 82
———, leave on medical certificate 511

Cantonment Sanitary Reports 174
Cantonments—Weekly Sanitary Returns 84
Carbolic Acid, Treatment of Guinea Worm. By A. Porter, M.D. 108
Chadwick, Mr. Outbreak of Epidemic Cholera in Conjeveram. 201
Chloride of Ammonium, Treatment of Hepatitis and Hepatic abscess. By W. Stewart, M. D. 439
Cholera Epidemic. Outbreak of, in Conjeveram, by Mr. J. Chadwick 201
———-—Hospital, Vepery. Treatment employed in, by E. F. Brockman, Esq. 193,270
———-—in Cantonments 345,513
———-—in Salem, by R. E. Pearse, Esq 301
———-—in the Deccan, by E. Balfour, Esq. 210
———-—,Sanitary 174
Cholera, Acetic Acid in 349
Cinchona Plantations, Neilgherry, by J. Broughton, Esq. .. 319
Committees—Medical Department 80
Communication of Syphilis by a nurse 264
Contributions to the Practice of Midwifery, by P. T. Mootoosawmy, G. M. M. C. 102
Cornish, W. R., Esq. On Scorbutic maladies as exemplified in the medical history of the Royals in India 177
———-———-———On the therapeutical value of Amorphous Quinine and other Alkaloids 35
Cystic, Multilocular growth of the neck removed by operation. By E. F. Brockman, Esq. 68

Day, Francis, Esq. On Turtle and Fish Oils 294
Deccan, Cholera in the. By E. Balfour, Esq. 210

Page.

Departure from stations 506
Deputy Inspector General of Hospitals—Relative Rank ... 163
Diabetes Mellitus, Case of. By A. Porter, M.D. 373
Docthers 176
DOUBLE MEDICAL STAFF, THE 50
Dracunculus. Note by Dr. G. Mackay... 292
Dress of Medical Department... 513

Epidemic Cholera in the Bengal Presidency. By James L. Bryden, M.D. ... ... *Review* 399,487

Faculty, Medical, of Madras University 263
Farquhar, W., M.D. Case of Tumour of lower end of Ulna. 151
———————Cases of gun-shot wounds treated in the Bowring Hospital 379
Fifty-five years rule 512
First Book of Indian Botany. By D. Oliver, F.R.S., F.L.S. ... ... *Review*... 142
Foot, Case of severe injury of the. By Mr. S. W. Lincoln ... 382
Fox, W. S., Esq. Case of tetanus following on amputation of the thigh 370
Furlough Allowances of Military Officers in Civil Employ 78,338,434
———————Applications for 86
———————of warrant officers holding honorary commissions 508
———————on expiry of privilege leave 507
———————Rules of 1868 337,338,340,342
———————————Allowances 509
———————————Applicable to Warrant Officers ... 343
———————————Extension of leave 505
———————————Retention of appointment ... 509
Furniture, Barrack 261

Gantz' Madras People's Almanac for 1870 ... *Review*... 146
Grade of Deputy Inspector General 141
Guazama tomentosa, Death from peritonitis caused by eating the fruit of the. By John Murray, M. D. 384
Guinea-Worm, Case of Septic infection. By Mr. Jolliffe Tufnell, F. R. C. S. I 152
———————Treatment of, by Carbolic Acid. By A. Porter, M. D... 108
Gun-shot wounds, Cases of. By W. Farquhar, M.D. ... 379

	Page.
Hamilton, W., Mr., Report of experiments with snake poison conducted by J. Shortt, M.D.	275
Hand presentation; case of spontaneous evolution. By A. Porter, M. D. ..	67
Harris, Prof. W. H., M. D. Report of the Government Lying-in Hospital, for the year 1868	1
——————————two cases of Ovariotomy ...	242
Hepatitis and Hepatic Abscess, Treatment of, by Chloride of Ammonium. By W. Stewart, M.D.	439
Hindustani Examination, Higher Standard	258
Home Orders	170
Honorary Assistant Surgeon Moodeen Sheriff ...	139
Horse Allowance	341
——————— on leave	509
Horses—Vety. Dept.	261
Hospital Apprentices, Ration money of...	508
——— Assistants and Passed Medical Pupils—Qualification.	77
———servants, wages on boardship	79
Hyderabad Contingent and Assigned Territories, Sickness in. By E. Balfour, Esq.	157
Hydrocephalus, Chronic, case of, by John Shortt, M.D ..	357
Insane soldiers of Native Army	435
Insanes—Sea out-fit of	174
————discharges	347
Inspections of Hospitals British Burmah	82
——————————Medical boards	261
Inspectors and Deputy Inspectors General of Hospitals, extra pension of	255
Johnstone Medal, The	515
Kurnool Jail, Report on, by C. A. Andrews, Esq ...	281
Languages, Native—Leave	257
Leave	86
——-Medical department	260
——-on medical certificate from Burmah	511
——-Pay	169
——-Staff	175
——-to England on medical certificate	433
————-Europe—Medical boards	339
Lincoln, Mr. L. W. Case of severe injury of the foot ...	382
Liver, Case of yellow acute atrophy of, by A. Porter, M.D ...	448

Page.

Lizards, Descriptions of some new, from Madras Presidency. By Major R. H. Beddome 30
Lying-in Hospital, Government. Dr. Harris' Report of, for the year 1868 1
Lynsdale, Mr. H. K. Report of experiments by Dr. Shortt on snake poison... 361

Mackay, Dr. G. Note on Dracunculus 292
Macnamara, A., Esq. A Treatise on Asiatic Cholera, *Review* 399,487
MADRAS MEDICAL FUND 141,218
———————SOCIETY, A. 225
Madras University Medical Faculty 263
Marches—Rum on 173
MEDICAL EDUCATION IN CEYLON 484
Medical Certificates,—Officers—Leave to England ... 433
————charge of station staff 433
————Department 346
———————Pay and allowances of subordinates... 172
————*Faculty of the Madras University* 130
————officers—Furlough—Regimental medical charge ... 167
——————in Civil employ—Acting allowances of ... 507
————FURLOUGH 134
————of 55 and 60 years of age—Deputy Inspectors General of Hospitals 431
————pupils—Hospital accommodation for 82
————Schools, Mofussil, Remarks of Inspector General on Report of Committee 500
————store supplies 510
Messing charges of officers' families in Indian troopships ... 78
Midwifery, Contributions to the Practice of. By Mr. P. T. Mootoosawmy, G. M. M. C. 102,364
Military officers in civil employ—Allowances during preparatory leave 162
———————————— Furlough allowances of .. 78,166
———————————————— Leave beyond India ... 161
Mofussil Medical Schools. Remarks of Inspector General on Report of Committee 500
MONTGOMERY, HOWARD BENJAMIN, M.D. 56
Moodeen Sheriff, Esq. Report of Out-door Patients in Triplicane Dispensary 111
Mootoosawmy, Mr. P. T. Contributions to the Practice of Midwifery 102, 364
Murray, John, M.D. Case of peritonitis and obstruction of the bowels caused by eating the fruit of the Guazama tomentosa 384

Page.

New Medical Code 140
—— Sydenham Society 141
No Demand certificates—Military officers in civil employ .. 337
Nurse, communication of Syphilis by a 264

Officers in England on special duty, Pay of 168
————India—Family remittances to Tasmania and other British colonies 164
————Travelling at the public expense 168
———— ———— to—Appointments 165
Official Changes 231
Oliver, D. First Book of Indian Botany ... *Review*... 142
Osteo-Sarcoma, Case of, by John Shortt, M. D. 147
Our Local "Materia Medica" 228
Ourselves 48
Ovariotomy, Two cases of, by Professor W. H. Harris, M.D 242

Passage in transport 169
Passages (Indian ports)—Messing contribution 166
———— Medical department 171
———— Travelling expenses 175
Passed Medical Pupils and Hospital Assistants—qualification 77
Pay on first appointment of medical officers 256
Pearse, R. E., Esq., Report on Cholera in Salem... ... 301
Pensions, Widows of officers 173
————, extra, of Inspectors and Deputy Inspectors General of Hospitals 255
Peritonitis and obstruction of the bowels from eating the fruit of the Guazama tomentosa, Case of, by John Murray, M.D. 384
Phlebitis, Case of general. By J. Wilson, Esq. 367
Poisons, regulations required by the Pharmacy Act, 1868, in selling by retail and dispensing 417
Porter, A., M.D., Case of acute yellow atrophy of the liver 448
———— ———— ————Diabetes mellitus 373
———— ————, ———— ————Hand presentation : Birth of the child by Spontaneous Evolution 67
Postal department 87
Practice, Cases in, by C A. Andrews, Esq. ... 387,459
Privilege leave, Furlough on expiry of 507
Promotion of Surgeons—Indian Medical Service 76
Proximate Cause the same as the Disease? By George Smith, M. D. 265

Page.

Quinine, Amorphous, and other Alkaloids. Therapeutical value of, by W. R. Cornish, Esq. 35
————Manufacture of, in Bengal 419
Quinovin or calcic quinovinate, by J. Broughton, Esq., Quinologist to Government 44

Railways, passage of women and children 83
————Passages by—Travelling expenses. 259
Ration money of hospital apprentices 508
Rations of native troops 349
Recent contributions to the literature of Asiatic Cholera. *Review* 399,487
Regulations required by the Pharmacy Act 1868, to be observed in selling by retail and dispensing poisons ... 417
Report, Annual, of Government Lying-in-Hospital, Madras, 1868. By Dr. Harris 1
——of Out-door Patients treated in the Triplicane Dispensary. By Mooden Sheriff, Esq. 111
————of the Conservator of Forests, for 1868-69. *Review*... 232
Retirements of officers 346
Returns, Sanitary 173,348
Ross, J. C., Esq. Sketch of Medical History of Bengal Native Army for 1868 ... ... *Review*... 60
Royals in India, Scorbutic Maladies in the. By W. R. Cornish, Esq. 177
Rum, issue of, forbidden 511

Salem, Cholera in, by R. E. Pearse, Esq. 301
Sale of Poisons 395,478
Sale of property to natives by British officers 73
Sanitary Condition of Cooly Emigrants in Ceylon ... 390
————Legislation 305
————reports 170
————Reports, Cantonment 83,174
———— returns 348
———— ———— Weekly, in military cantonments ... 84
———— ———— of women and children 436
Schools, Medical, Mofussil, Remarks of Inspector General on Report of Committee 500
Scorbutic maladies as exemplified in the medical history of the Royals in India sixty years ago. By W. R. Cornish, Esq. 177
Septic infection caused by Guinea-worm. By Mr. Jolliffe Tufnell 152

Page.

Sergeants, Hospital, British regiments, Pay and rations of... 341
Service, Statements of, in applications for furlough ... 252
Shortt, John, M. D. Case of Chronic hydrocephalus ... 377
———————————Osteo Sarcoma 147
——————————— Cases of snake-bite... ... 351,451
——————————— experiments with Snake Poison ... 214,275
Sketch of the Medical History of the Bengal Native Army for 1868 ... ... *Review* ... 60
Smith, George, M.D. A note on the therapeutic action of antimony 198
——————————— Is the proximate cause the same as the Disease? 265
——————————— on zymotic diseases 89
Snake Bite 309
Snake (cobra) bite, Case of, successfully treated, by John Shortt, M. D.... 236
Snake-bite, diagram of rise and fall of temperature and pulse, by Mr. B. B. Allan 251
——————Cases of. By John Shortt, M. D. ... 351,451
Snake Poison, Experiments on, at the Medical College, by Dr. J. Shortt 214, 275
———————Dr. Shortt's experiments with 361
Special Cholera Investigation 138
Spontaneous Evolution, Case of. By A. Porter, M.D. ... 67
Staff allowances—Sub-Medical Department ... 73
State Medicine 229
Station staff, Medical charge of 433
Statistics of cholera. By E. Balfour, Esq. *Review* 399, 487
Stewart, W., M.D. On the treatment of Hepatitis and Hepatic Abscess by Chloride of Ammonium 439
Sub-assistant surgeons—Pension—Leave 161
Sub-medical department—Special grants 166
——————————————— Staff allowances of ... 73
Supplement to the Pharmacopœia of India. By Moodeen Sheriff, Esq. ... ...*Review*... 315
Surgeons, Promotion of, Indian Medical Service... ... 76
Syphilis, Communication of, by a nurse 264

Telegraph department 83
Tenacity of the Vaccine Virus (The) 482
Tetanus, Case of, following amputation of thigh. By W. S. Fox, Esq. 370
Travelling expenses, passages by railways 259
——————— on transfer 508

Page.

Treatise on Asiatic Cholera, by C. Macnamara, Esq. *Review* 399,487
Triplicane Dispensary, Report of Out-door patients, by Moodeen Sheriff, Esq. 111
Troop Ships, Messing charges of officers' families in ... 78
Tumour of lower end of Ulna, Case of, by W. Farquhar, M.D. 151
Turtle and Fish-Oils. By Francis Day, Esq. 294
Turtle Oil. By Mr. T. Anthony Pillay 277

Vacant "Good Service Pension." The 140

Warrant and non-commissioned officers—Pay, &c. &c. while on field service 163
Warrant officers—Discipline—Pay 347
———— ————Furlough Rules of 1868 343
——————————Horse allowance of 341
——————————Medical—Widows of 341
———— ————holding honorary commissions... ... 508
Widows of medical warrant officers 341
————————officers—Pensions of 173
Widows' pensions.—Sub-Medical Department 431
Wilson, J., Esq., Case of general phlebitis, by 367
Women and children—Sanitary returns of 436

Zymotic Diseases. By George Smith, M.D. 89

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